

# Western Industry

September 1957

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**THE WESTERN POWER EQUIPMENT  
PACEMAKER PLANT—1957**  
(a composite)

COMPLETE IN THIS ISSUE  
.. on colored pages

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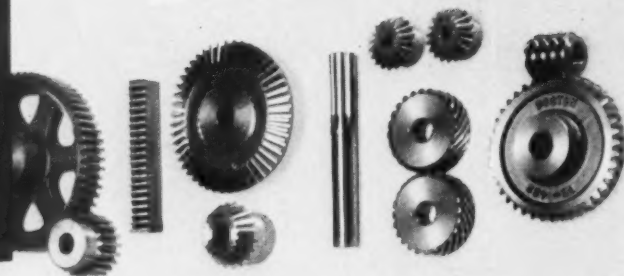
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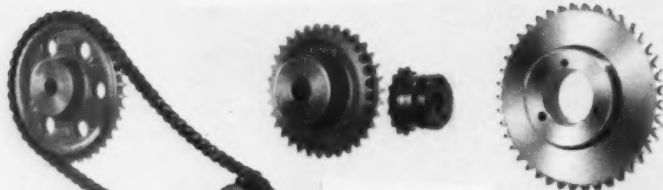
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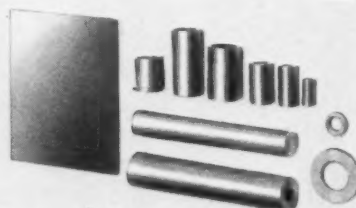


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Volume 5

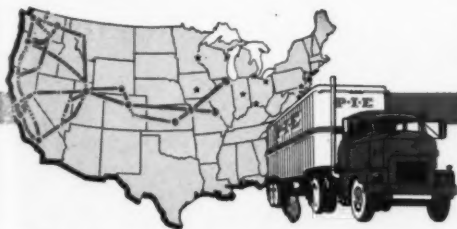
Issue 12



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WESTERN INDUSTRY — September 1957



SEPTEMBER, 1957

Vol. XXII, No. 9

## WESTERN POWER EQUIPMENT PACEMAKER PLANTS—1957

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PACEMAKER power system that has the ability and agility of a star halfback to get anywhere in the firm's 10 football fields of space.
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PACEMAKER Western-developed system converts conventional production tools for more automatic and precise work.
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PACEMAKER compressor set-up creates extreme environmental testing conditions with unbelievable speed and efficiency.
- Turn your by-product into power . . . . . 50  
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- Power for a remote desert plant . . . . . 52  
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- Waist-high bus duct can be tops! . . . . . 58  
PACEMAKER installation of a bus duct only four feet off the floor. Eliminates clutter, safety hazards and saves on installation time.
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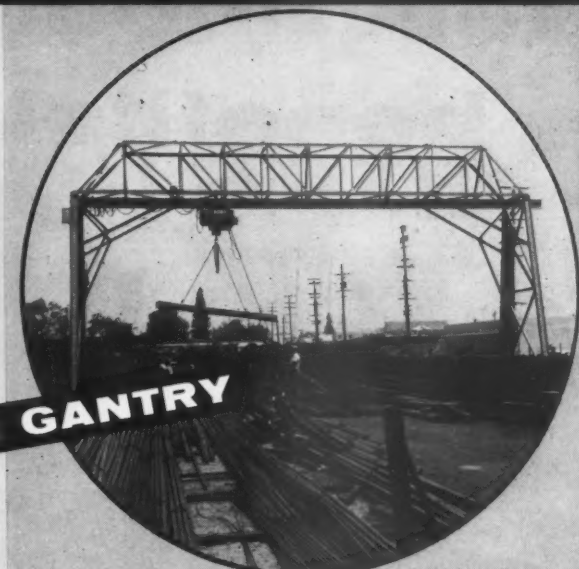
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The Essential Publication for Manufacturing Management in the New Industrial West

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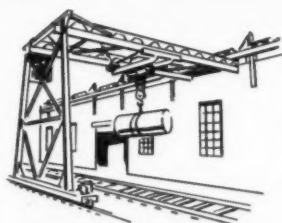


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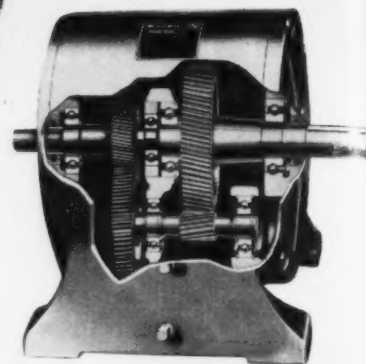
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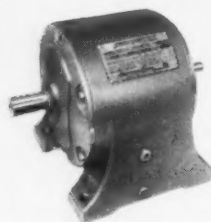
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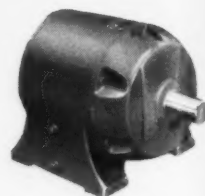
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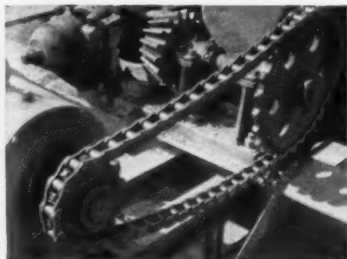


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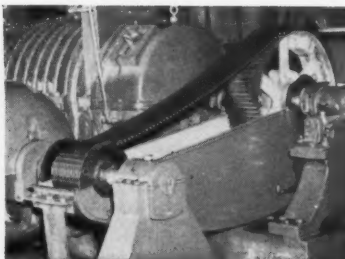
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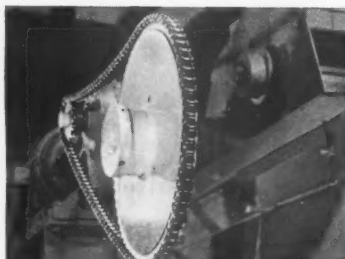
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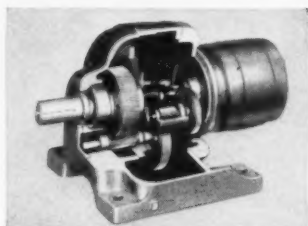
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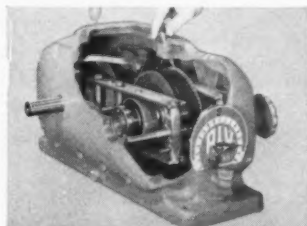
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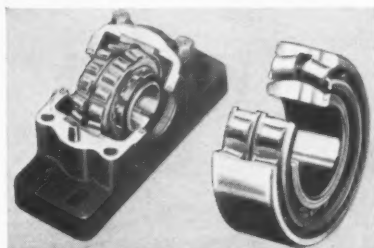
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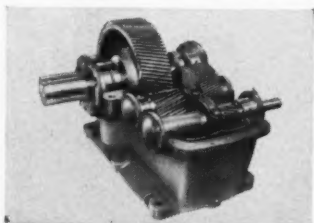
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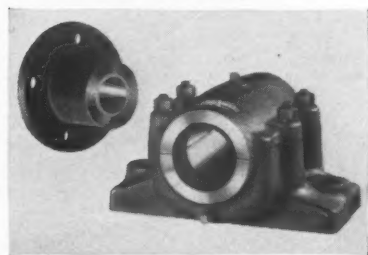
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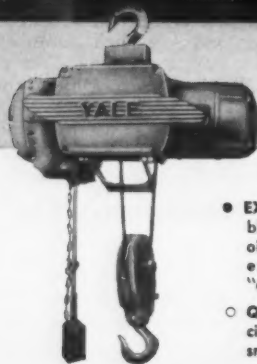
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## NEW IDEA IN MATERIALS HANDLING FOR T



**PROCESS BEGINS**—The barrels are loaded manually—then the operator simply pushes the "automatic" button to dispatch hoists, handling barrels full of parts, through the processing cycle.

### CHECK THESE OUTSTANDING ENGINEERING FEATURES OF EVERY YALE CABLE KING:

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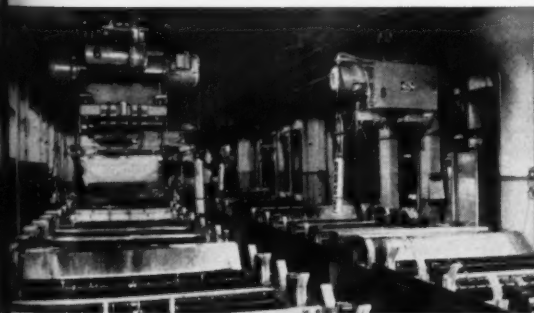
*Yale Cable King Electric Hoists the natural choice.* Cable Kings are rugged, precision-engineered and stand up under *continuous* heavy-duty cycles. That's because Yale's exclusive aircooling system and load brake lubrication quickly dissi-

pate brake heat...eliminate the need for "cool-off" time...keep Cable Kings running at top efficiency day-in, day-out. (For other features, see opposite page.)

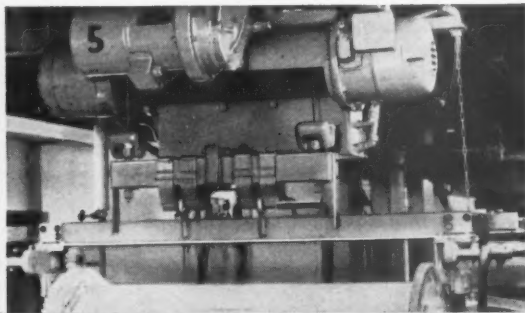
If materials in your plant, warehouse or shipping area must be moved at a fast and steady pace, why not find out how *one* Yale Cable King Hoist or a number of them in a coordinated handling *system* can step up production, eliminate wasted effort and increase the safety factor of your handling operations. Contact your Yale Hoist Distributor and discuss with him your particular handling problems. Or, write The Yale & Towne Mfg. Co., Philadelphia 15, Pa., Dept. A-269.

**To meet the need of expanding industries for better materials handling methods and equipment, look to Yale for advances in research, engineering, manufacturing, sales, service—as**

**YALE BUILDS FOR THE NEW ERA**



**SIMPLICITY**—The whole system fits into a compact area. Hoist in left foreground is automatically cycling through the process prior to plating. Hoist on right is moving plated parts through final processing.



**PRECISION CONTROL**—Limit switches alongside overhead track control hoist travel. Gear in tank meshes with gear on barrel, determines rotation speed. Automatic controls "signal" hoists to proceed to next tank.

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## HOW CAN INDUSTRY AND EDUCATION COOPERATE TO END THE NATION'S SCIENTIFIC MANPOWER SHORTAGE?

That was the subject of a week-long conference during July when 100 national leaders in science, education and industry met at Lake Arrowhead, Calif. Out of the conference came an action that could have tremendous effect on both industry and this country's scientific instruction techniques: a pilot program for organized industry-education cooperation that will first be used in the Southern California area and then extended to other areas and communities nationally.

**Sponsors of the conference** were the National Academy of Sciences, key scientific advisory body to the Federal government since the Civil War, and Hughes Aircraft Co. of Culver City, Calif., the West's biggest developer and manufacturer of electronic equipment. For five days the conference delegates heard national authorities outline the dimensions of the manpower problem, with breaks only for meals and sleep at the new University of California extension conference center where the meeting was held. Government experts like Robert L. Clark, executive secretary of the President's Committee on Scientists and Engineers, warned that "the scientific manpower shortage can be ended only in the local classroom" by improved teaching of science courses from grade school through junior college. A scientific specialist of the U. S. Office of Education, Ellsworth S. Obourn, pointed out that the number of new science and mathematics high school teachers had dropped more than 50% between 1950 and 1954, and only now is beginning to climb slowly toward 1950 levels. Finally teachers, businessmen and scientists from eight different states described local teamwork between industry and education that had improved science instruction in the nation's schools. By noon of the last conference day, the delegates had:

**Established a permanent Southern California Industry-Education Council**, with a full-time paid executive secretary and a five-man steering committee representing both industry and education.

**Appointed five area "salesmen" within the Southern California area**, each with the responsibility of getting together more industries and schools to improve science programs.

**Okayed a drive to raise funds from industry** for running the new Council and received informal assurances from industrial delegates that the needed money would be forthcoming. (Both the National Academy of Sciences and the National Science Foundation also promised financial backing if necessary.)

**Agreed to publish a manual**, with the backing of the National Academy of Sciences, to show other areas how to

start their own industry-education cooperative programs.

**Hired as the Council's first executive secretary** James T. Robinson, 34, a brilliant high school science teacher from Whittier, Calif., with a crewcut and a knack of distilling complex scientific principles into simple language.

**"Industry and education delegates to the Arrowhead conference quickly discovered that they had the same goals,"** said Dr. Lester C. Van Atta, associate director of research for Hughes Aircraft Co. and one of the initiators of the Lake Arrowhead meeting. "Industrialists discovered that educators want industry's help in making science teaching come alive through demonstrations of the practical applications of scientific theory. Educators found that industrialists want their future scientists to get plenty of English and other non-scientific courses as well as technical training, to help them 'think big' and then communicate their ideas to others. With this kind of mutual understanding, the new Council can serve as a catalyst for increased industry-education cooperation, and also as a clearing house where industry and education can make contact with one another to plan new joint projects." Dr. Van Atta speaks with authority, for Hughes has one of the broadest industry education programs in the country (described in the June 1957 WESTERN INDUSTRY, page 20).

**The Southern California Industry-Education Council (SCIEC)** plans to encourage more industries and communities to adopt programs like that of Hughes, as well as others cited in reports at the conference. And SCIEC is moving fast. Less than 48 hours after Arrowhead delegates established the new organization, executive secretary Robinson was investigating free office space offered by numerous groups, among them two Los Angeles industries, a professional scientific group and the Los Angeles public schools. By September, steering committee members pre-



**"INDUSTRY AND EDUCATION** quickly discover they have the same goals," said Dr. Lester C. Van Atta (second from left) of Hughes Aircraft, an initiator of the significant Lake Arrowhead, Calif., conference. "But," said Robert L. Clark (right), government scientific education expert, "the scientific manpower shortage can be ended only in the local classroom."

dict, Southern California will have a mushrooming program of industry-education cooperation from Fresno to San Diego.

**Nor will this cooperation remain limited to teamwork on improved teaching of science**, predicts Dr. Randall M. Whaley, executive director of the advisory board of education at the National Academy of Sciences. "The Southern California pilot program is aimed at helping improve the teaching of science in the schools, because that is one of the nation's most pressing problems," Dr. Whaley said. "When industrialists and educators get to know one another better, however, there will be an opportunity to

. . . continued on page 12





End view of new 3-wire duct. Polarizing bar on side of duct meets all code requirements for polarization. The duct is Underwriters listed, single-phase, 3-wire, 120/240 V.



A Bulldog field engineer will gladly point out the many advantages of Trol-E-Duct and other Bulldog electrical equipment. You'll find his engineering know-how most helpful when you plan to expand or modernize electrical facilities.

## Big new development in lighting — 3-wire Universal Trol-E-Duct!

Bulldog's new 3-wire Universal Trol-E-Duct® is literally packed with advantages for you. It offers twice the load capacity of 2-wire systems . . . yet costs no more to install. It provides a constant circuit for night lighting and/or a separate circuit for wall or column receptacles. It permits the flexibility of staggering lighting circuits. It is light weight, compact . . . requires less space than any other 3-wire system, too.

Like 2-wire Universal Trol-E-Duct, it is completely flexible. It both feeds and supports lights anywhere along its length. Lets you connect or disconnect a lighting fixture with but a simple twist. No rewiring, no costly shutdowns, no extra expense when you rearrange your lighting systems.

Get the full story. See your electrical contractor or call in a Bulldog field engineer now.

© BEEPCO

Bulldog Electric Products Company, Detroit 32, Michigan • A Division of I-T-E Circuit Breaker Company • Export Division: 13 East 40th St., New York 16, N.Y. In Canada: Bulldog Electric Products Co. (Canada), Limited, 80 Clayson Rd., Toronto 15, Ontario.



IF IT'S NEW . . . IF IT'S DIFFERENT . . . IF IT'S BETTER . . . IT'S

# BULLDOG

ELECTRIC PRODUCTS COMPANY

A DIVISION OF I-T-E CIRCUIT BREAKER COMPANY

### CONSULT THE FOLLOWING PACIFIC COAST REPRESENTATIVES:

COAST ELECTRIC & MANUFACTURING CO.  
1733 N.E. Seventh Avenue, P.O. Box 7712  
Portland 12, Oregon

YOUNG ELECTRIC & MFG. CO.  
2134 Curtis St.  
Denver 2, Colorado

SAFETY SWITCHBOARD COMPANY  
910—89th Avenue  
Oakland 21, California

BULLDOG ELEC. PROD. CO. OF LOS ANGELES  
2885 E. Washington Blvd.  
Los Angeles 23, California

... for more details, circle No. 7 on Reader Service Postcard

See Directory listing page 112

## LABOR NOTES

... continued  
from page 10

# Here's How Free Daylight Is Saving One Company

## \$58,023<sup>00</sup>

SEND FOR  
YOUR FREE COPY

This lighting cost analysis by an independent consulting engineer reveals the money actually being saved in one metal building through the use of Corrugulux daylighting panels in place of artificial lighting. Comparative costs of both methods are projected over a ten-year period, indicating a savings with Corrugulux, of over \$58,000.00.

Similar savings are possible in your construction picture.

Write for your copy of this important analysis today. **On your letterhead, please.**



**Corrugulux®**  
L-O-F GLASS FIBERS COMPANY  
Dept. C • P. O. Box 20026, Houston 25, Texas



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expand their cooperation to other fields. We hope that industry's increasing interest in education will stimulate other groups in each community to take an increased interest in their schools. The result will be an impressive upgrading of our entire educational system, and a better life for everyone in the nation."

**HAVING TROUBLE GETTING YOUR FOREMEN EXCITED ABOUT COST CONTROL?** Then you'd better sign up for one of the "Cost Reduction Courses," scheduled in both Los Angeles and San Francisco soon, sponsored by the American Management Association.

The one-week course for production executives who supervise foremen will be held November 11-15 at the Hotel Ambassador in Los Angeles, and April 28-May 2 at the Sheraton-Palace Hotel in San Francisco.

The course is designed to teach operating executives who are responsible for the performance of first-line supervisors how to carry out a comprehensive, continuing cost reduction and control program. Emphasis will be on ways of getting foremen to think of cost control as an integral part of their jobs rather than as short-term projects.

Principal subjects to be covered in the course are: the major principles of cost reduction, guides for selecting the areas in which cost-reduction efforts should be concentrated, financial and non-financial incentives, quality control, employee selection and training, methods improvement, etc. Instruction methods will include lectures by operating executives from industry, small-group discussion meetings, and problem-solving project sessions.

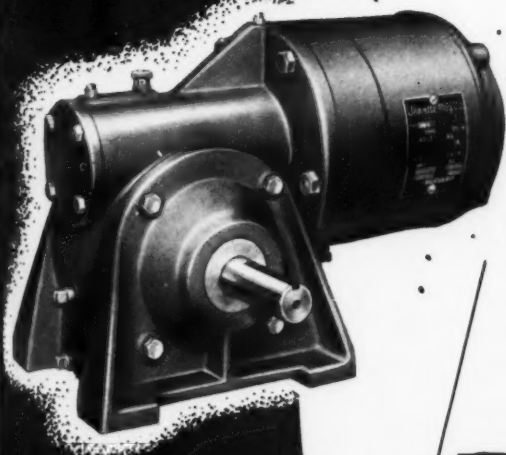
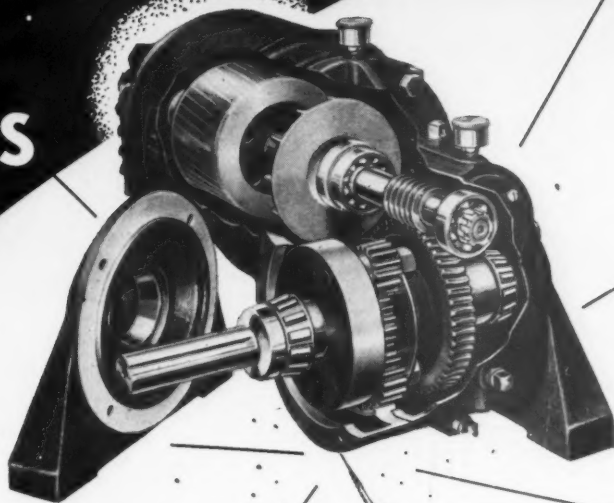
Registration fee is \$300 for non-members of the AMA; \$250 for members—including the cost of all luncheons and course materials. You can get all the facts from the American Management Association, 1515 Broadway, Times Square, New York 36.

**GIFTS ARE AN ADDED SUGGESTION INCENTIVE** for employees at Firestone Tire and Rubber Co., Los Angeles. For a 4-month period ending Sept. 30, employees who turn in suggestions that are approved will not only receive

... continued on page 18

FOR ENGINEERS  
TO EXPRESS  
THAT

*One touch of genius...*



THEY CHOOSE

**Janette**

GEAR MOTORS • SPEED REDUCERS

Because engineers know they can depend on Janette to give the right speed at the right power in a wider variety of models with a larger choice of mounting positions, engineers make Janette their first choice.

Since 1910, Janette has been designing longer lasting, easier to maintain gear motors and speed reducers. Whether the requirements are for horsepower from 1/150 to 7½ or for one revolution every 5 hours to 450 R. P. M., Janette has the speed reducer and gear motor to do the job.

REPRESENTATIVES AND  
DISTRIBUTORS IN ALL  
PRINCIPAL CITIES...

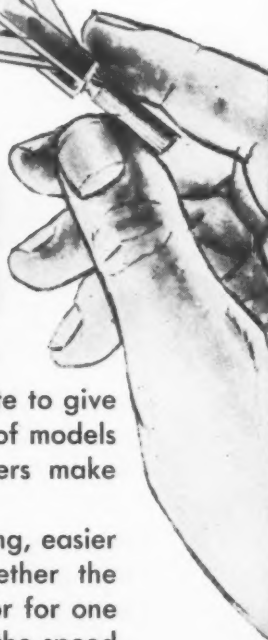
**Janette**

For additional information send for  
Janette bulletin 5-105, W2

**ELECTRIC MANUFACTURING CO.**

MORTON GROVE, ILLINOIS

... for more details, circle No. 9 on Reader Service Postcard  
See Directory listing page 122





# STORE

## in low-cost, clear-span Soulé Buildings

**Safe, dry Soulé Buildings** make economical warehouses for any commodity. Their post-free interiors provide maximum *usable* storage space, let you stack wall-to-wall all the way up to the ridge! Clear-span also means you can install crane-ways and use other mechanical handling equipment. Wide double sliding doors are big enough for truck-trailers and carry-alls.

**Economical Soulé Buildings.** Mass production of building parts plus fast erection by our crews assure low initial cost. And the rugged steel frames with either corrugated galvanized steel or aluminum sheets practically eliminate maintenance expense. Soulé Buildings are made in a wide range of sizes to fit any need or budget.

**Soulé is the West's largest Building Manufacturer**





# MORE



**Ready in days!** Building parts are mass-produced, ready for quick erection. Within days after our crews arrive, you're using your new Soulé Building.

**Attractive exteriors.** Your contractor can add a modern, distinctive facade to your Soulé Building at half the "custom" building cost!



**Expand easily at low-cost!** All-bolted construction helps you add length, width or wings to your Soulé Building quickly at low-cost.

## Soulé

LEADER IN STEEL BUILDINGS

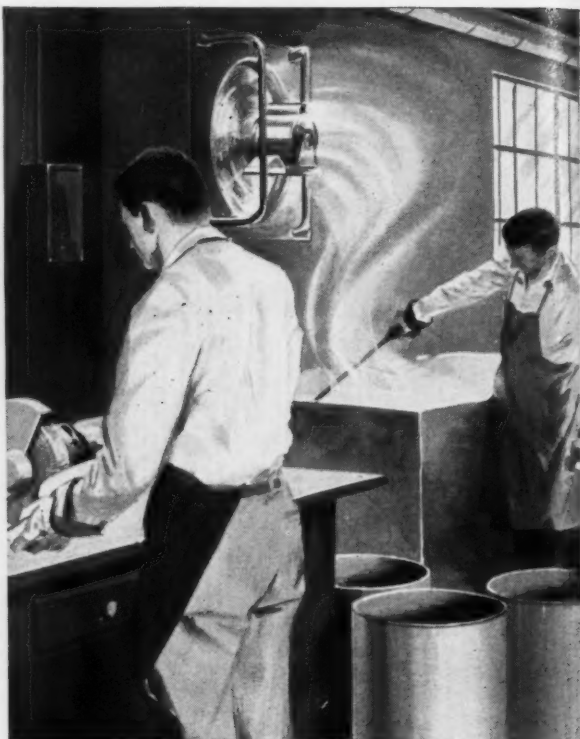
4110

### SOULÉ STEEL COMPANY

San Francisco 1750 Army Street, Valencia 4-4141 • Los Angeles 6200 Wilmington Avenue, LUdlow 5-0911  
 San Diego 1975 Fifth Avenue, BElmont 2-1071 • Portland 2630 N.W. St. Helens Road, CApitol 3-5154  
 Seattle 4100 West Marginal Way, HOLly 3600 • Spokane East 41 Gray Avenue, RIVERSide 7-8063  
 Phoenix 2026 South 11th Avenue, ALPine 3-3178 • Salt Lake City 220 Greyhound Building, EMpire 3-7728

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FROM OFFICE . . . TO FACTORY



## ... bad air vanishes with Ventura Fans



American Blower Model K Ventura Fan

Whisk away stale air with an American Blower Ventura Fan — the popular choice for all types of commercial and industrial applications, from cafeterias, laundries, offices to salesrooms, warehouses, factories.

American Blower engineering experience is behind every Ventura Fan. Balanced ventilation, quiet operation, functional streamline design ensure you of top operating efficiency for many years.

For competent advice on where to install your Ventura Fan for maximum efficiency, and on what model will best fit the requirements of your building, call your nearest building contractor or electrical supplier, today. American Blower Division of American-Standard, Detroit 32, Michigan. In Canada: Canadian Sirocco products, Windsor, Ontario.

### AMERICAN BLOWER

Division of **AMERICAN-STANDARD**

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WESTERN INDUSTRY — September 1957





Another **STANLEY STEEL STRAPAPPLICATION\*** on the job

## This job tension relieves headaches

There's no need to worry about the spilling or damaging of these close tolerance stampings (1,200 lbs per truck load) on their mile-long intra-plant trip to the assembly point. Stanley Steel Strapping has the great strength required to take and hold the tension that guarantees a **secure, safe** package. For the same reason, Stanley Steel Strapping is the logical choice to keep any material or package **YOU** ship securely bound and completely safe in transit to **any** destination. Stanley can provide whatever size strapping is just right for your needs and the tools — hand or power — that assure easy, fast strapping.

**WRITE FOR YOUR FREE COPY** of the "Stanley Strapping Manual of Packaging and Shipping" — which gives complete information — to **STEEL STRAPPING DIVISION**, The Stanley Works, Department I, 1216 Lake Street, New Britain, Connecticut.



**INSURE IT-SECURE IT-WITH STANLEY STEEL STRAPPING**

# STANLEY

*\*The system-atic way to solve specific materials handling problems*

STANLEY TOOLS • STANLEY HARDWARE • STANLEY ELECTRIC TOOLS • STANLEY STEEL STRAPPING • STANLEY STEEL

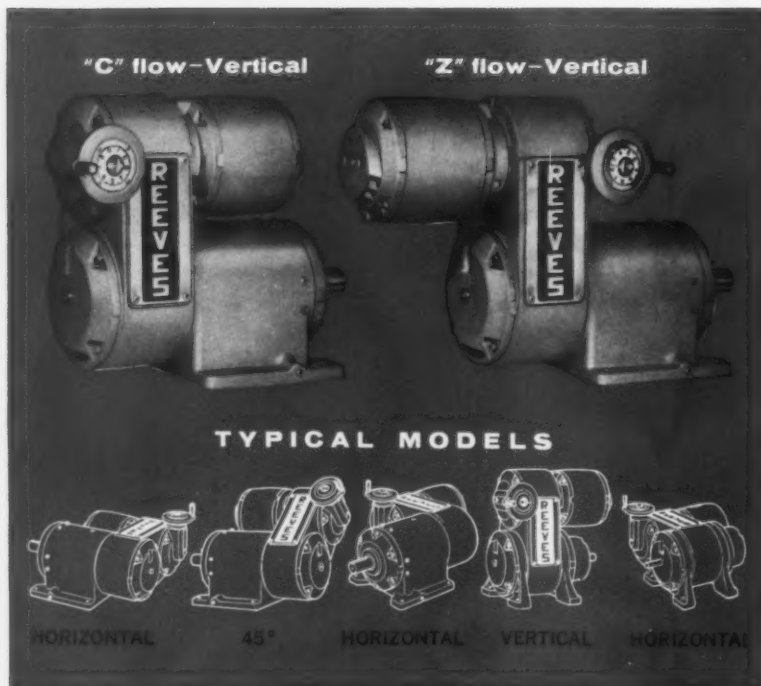
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NEW

# REEVES®

Sizes 200-300 Vari-Speed MOTODRIVES\*

\*200-300 Size, 1 through 5 hp.; full line, ¼ through 40 hp.



The flexible design of these compact new REEVES variable speed power packages permits hundreds of combinations . . . space-saving, space-fitting *standard* assemblies to meet most installation requirements. All models are available in both "C" flow and "Z" flow styles.

New increased capacity is built in the reducers—single, double or triple stages . . . new disc assemblies permit wider output speed ranges . . . discs are pre-aligned . . . pre-loaded spring maintains correct belt tension for longer belt wear . . . *exclusive* "close-grooving" lubrication assures free sliding discs . . . new Meter-matic system automatically lubricates the motor and variable shaft bearings.

Complete information on all phases of the versatile 200-300 sizes Vari-Speed Motodrives is given in new Catalog. Write for your free copy today—Dept. 32a-M571.

REEVES DIVISION  
**RELIANCE ELECTRIC AND ENGINEERING CO.**  
1525 ADRIAN ROAD, BURLINGAME, CAL.

... for more details, circle No. 13 on Reader Service Postcard  
See Directory listing page 129

## LABOR NOTES

... continued  
from page 12

regular awards, but also can take their pick of such premiums as a cigarette lighter, desk pen, wallet, etc.

A "PATENT INCENTIVE PLAN" is a new idea just put into operation by Lear, Inc., Santa Monica, Calif., aeronautical systems and components manufacturer. Under the plan, inventor-employees may receive cash payments ranging from \$25 to more than \$20,000 on each of their inventions.

**Here's how it works:** Any Lear employee who either alone or in collaboration with other employees submits a new idea or combination of ideas that produces a desirable and novel result may benefit from the plan. Although the invention need not be directly applicable to Lear production, the company stipulates that it must be one required to be automatically assigned to the firm within the terms of the employment agreement.

**The employee receives \$25 when the company files a patent application** with the U. S. Patent Office, and an additional \$50 when the patent is issued. In the event the firm licenses the patent to another company, the inventor, subject to certain limitations set forth in the plan, receives 10% of the net cash royalties received by the company until he has received an aggregate of \$5,000; thereafter 5% until he has received an additional \$5,000; thereafter 2½% until he has received an additional \$10,000. After receiving \$20,000 in royalties under this graduated payment plan, the percentage is reduced to 1½% on subsequent royalties accruing from a single patent. Employees may, however, draw the higher percentages on several patents simultaneously.

**BEEN WORRIED ABOUT THE MONEY GOING INTO HEALTH AND WELFARE PROGRAMS?** Then, you'll want to read a new monograph on this subject, discussing trends in the amount of money spent, who will spend it, and what it will be spent for. As published by the Industrial Relations Section at Caltech, you can get a copy for \$1.00 by writing to Bookstore, Calif. Institute of Technology, Pasadena, Calif.



# CAUGHT WITH YOUR METAL DOWN?



When you need steel or aluminum service *in a hurry*...you can depend on Jorgensen. You can be sure of prompt, exacting attention to your requirements...of seasoned technical advice...of getting the *right* items for your job from Jorgensen's steel and aluminum inventories. Complete stocks to give

you the exact item you want in carbon, stainless, alloy, tool, and specialty steels, as well as all forms of aluminum. You can be sure of service—because for 35 years Jorgensen's growth has been based on the desire to serve...*better*.

**...CALL JORGENSEN FIRST!**

## EARLE M. JORGENSEN CO. STEEL

### LOS ANGELES

10650 S. Alameda St.  
LOrain 7-1122

### OAKLAND

1657 W. Grand Ave.  
Hlgate 4-2030

### SAN FRANCISCO

700 Pennsylvania Ave.  
Mission 7-7800

### HOUSTON

5311 Clinton Dr.  
ORchard 2-1621

### DALLAS

2030 W. Commerce St.  
Riverside 1-1761

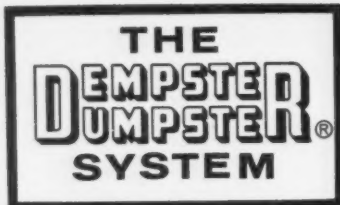
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7311 East Pine St.  
TEmples 5-1511

FORT WORTH: Dial EDison 6-0578



**Among the thousands of users—**



**Also Performs Important  
Materials Handling Jobs for this  
Prominent Electrical Manufacturer**

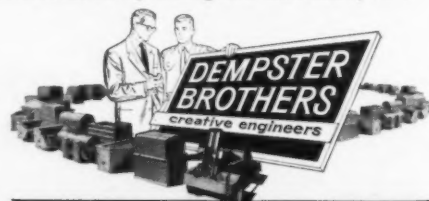


**O**ne major use of the Dempster-Dumpster System in a large General Electric plant is for scrap materials collection. The Dempster-Dumpster Detachable Containers are placed in various areas, such as wire preparation and parts fabrication. When they are filled the truck-mounted Dempster-Dumpster, operated by only one man, the driver, picks up load, hauls and dumps in their scrap and salvage area . . . handling one-container-after-another. In a similar manner, this amazing low cost system also is used to collect waste materials around this factory. We at Dempster Brothers are proud to name the General

Electric Company among the thousands of users of the Dempster-Dumpster System.

You, too, can reduce your bulk materials handling cost with this modern method — a flexible system that (1) enables you to obtain and use any required number of containers, each in the design and size to meet different material requirements, and (2) collect, haul, dump and/or transfer materials of every description with one truck-mounted Dempster-Dumpster operated by only one man, the driver. Write us today for complete information. Manufactured by Dempster Brothers, Inc.

**THERE IS A DEMPSTER-DUMPSTER DETACHABLE CONTAINER AVAILABLE OR THAT CAN BE BUILT TO SUIT THE MATERIAL—** be it solid, liquid, dusty, combustible, high temperature . . . waste or salvable, raw or finished product, and each, regardless of size up to 21 cubic yards or capacity up to and over 36,000 lbs. payload, can be handled by one truck-mounted Dempster-Dumpster with only one man, the driver! Savings are tremendous!



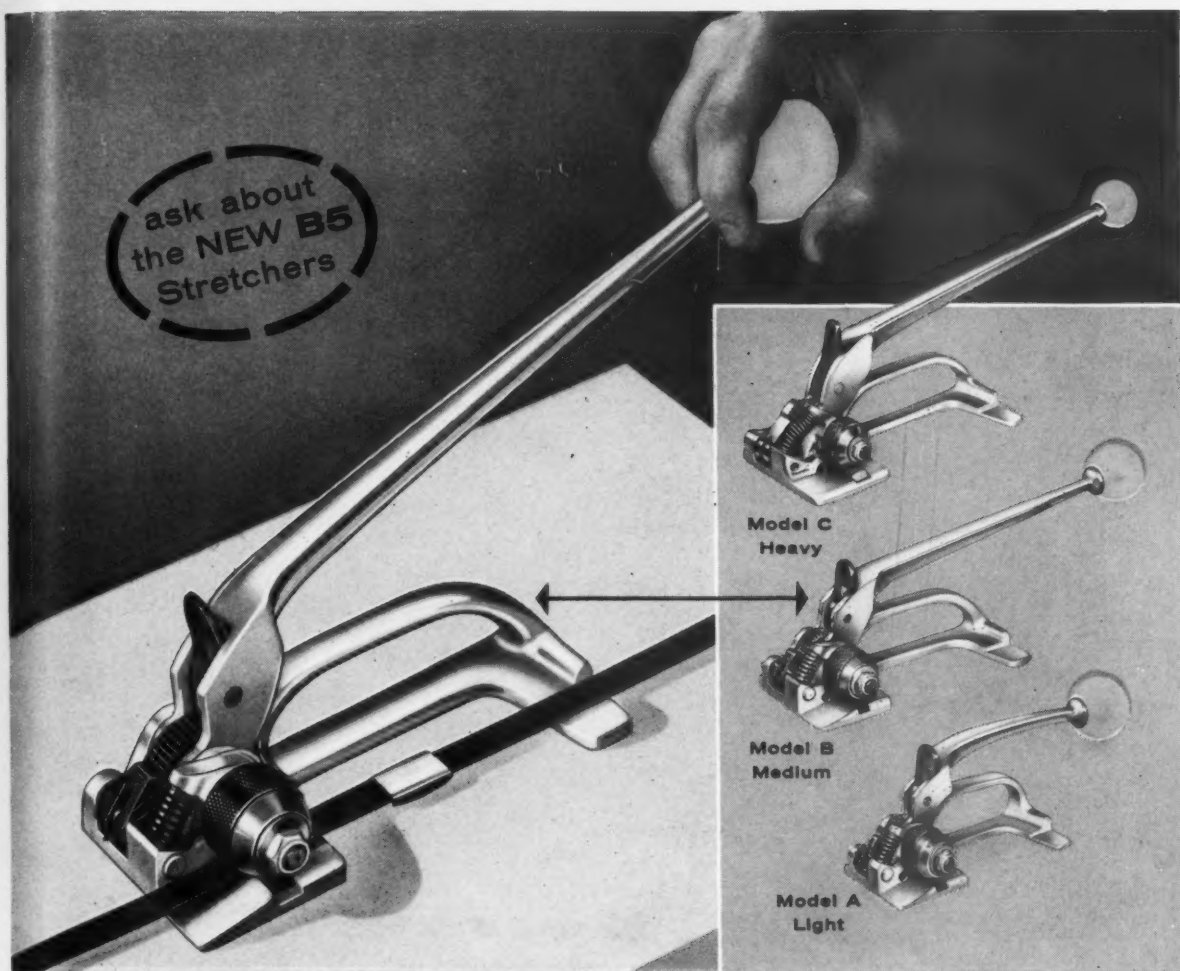
successfully exploring new ideas to reduce your materials handling costs with the



**DEMPSTER BROTHERS, 597 N. Knox, Knoxville 17, Tenn.**

... for more details, circle No. 14 on Reader Service Postcard

**WESTERN INDUSTRY — September 1957**



Ask your AIM\* about the brand new B5 stretchers  
**Acme Idea tensioning tools for steel strapping**



**ACME STEEL COMPANY** now offers the new B5 Stretchers . . . the most versatile Idea strapping tools available to industry.

The B5 Stretchers are rugged but without excess weight and properly balanced. They can be used left or right handed, with the strapping dispenser either ahead or behind the operator for standard or reverse loop applications.

The design of the new B5 Stretchers permits fast, easy entry and alignment of the strap loop ready for tensioning. And the B5 Stretchers can be used to apply strapping in any direction, with the same ease of operation.

The arrangement of the rotary gripping dog permits continuous, unlimited take-up, quick release after strapping is tensioned. B5 handles can be positioned quickly for maximum leverage in confined areas. B5 Stretchers come in three sizes—Model A for light, Model B for medium and Model C for heavy applications.

\*Ask your Acme Idea Man about the new B5 Stretchers today. Contact him at the nearest Acme Steel office, or write: Dept. WCS-97, Acme Steel Products Division, Acme Steel Company, 4901 Pacific Blvd., Los Angeles 58, California. Also San Francisco, Seattle, Portland.



## STEEL STRAPPING

... for more details, circle No. 15 on Reader Service Postcard



George W. Rabe, Welding Foreman at Wilmot Engineering Co., says:

## "When it comes to cutting, our #42 Camograph is a jack-of-all-trades"



**Unerring Accuracy.** Permanently magnetized tracer hugs steel template. Knurled roller follows most intricate shapes at constant speed.

The Airco #42 Camograph shown at left has eliminated much of the manual flame cutting operations in the White Haven, Pa., plant of the Wilmot Engineering Company. Welding Foreman, George W. Rabe, appreciates the way it can be set up, leveled and put to work anywhere in the shop in just a matter of minutes. Accurate Camograph shape cutting reduces the need for machining of many parts including sprockets, lugs and shaft arms. It is often used for moderate production runs of identical pieces.

Learn more about the versatile #42 Camograph and put its many time and labor saving features to work for you. Contact your nearest Airco office or call your local Authorized Airco Dealer for details. Ask for Catalog ADC 853.



Three cuts by the #42 Camograph eliminated extensive machining to produce this intricate piece.



## AIR REDUCTION PACIFIC COMPANY

SAN FRANCISCO • LOS ANGELES • PORTLAND • SEATTLE  
Bakersfield • Burbank • Emeryville • Fresno • Inglewood  
Sacramento • San Diego • Stockton • Tacoma

Western Headquarters for  
Oxygen, Acetylene and Other  
Gases . . . Carbide . . . Gas Welding  
and Cutting Machines,  
Apparatus and Supplies . . . Arc  
Welders, Electrodes and Accessories

Air Reduction Pacific Company is a division of Air Reduction Company, Incorporated. Principal products of other divisions include: PURECO — carbon dioxide — gaseous, liquid, solid ("DRY-ICE") • OHIO — medical gases and hospital equipment • NATIONAL CARBIDE — pipeline acetylene and calcium carbide • AIRCO — acetylenic chemicals • COLTON — polyvinyl-acetates, — alcohols, and other synthetic resins.



**NO OUTSIDE PROJECTIONS**  
*for close-quarter work!*

No. 666-9  
HELMET

No. 666-9 Hand shield  
with strong, securely  
riveted handle.

No. 666-9 HELMET

**WELD and SEE  
EASIER... SAFER**  
with

**FIBRE-METAL**

**FEATURES:**

- Lightweight
- Rugged
- Ample ventilation
- No outside projections
- Ratchet headsize adjustment
- Two positive stops
- Replaceable sweatband
- Headgear not riveted to shell
- All parts easily replaced

# New narrow **LIFT-FRONT** helmet

Light, most practical, work-easy and see-easy, this NEW Fibre-Metal Helmet is a most wanted companion to the very popular 666-9!

Sturdy shells, from a flat sheet of fibre with deeply lapped seams sealed by oversize rivets, have a narrow straight line-of-sight shape for close-quarter work with sides extended deeper than ordinary helmets for maximum protection against side flashes. No. 668-9 has a NEW exceptionally light No. 1176 Dowmetal lift front, insulated on the inside of the helmet.

Headgear has two positive stops, two position joints equalizing movement, and is now equipped with the famous Wide Range Ratchet Adjustment to accurately fit all head sizes. All Helmets are furnished with padded sweatband for additional comfort and all parts are easily replaced.



**WIDE RANGE ADJUSTMENT**

Quick, positive, completely enclosed and insulated from head! No hair pulling!

For name of local distributor  
contact factory warehouse:

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2918 E. Florence Ave. **LU 2-7259**  
Huntington Park, Calif.

**ASK YOUR SAFETY &  
WELDING SUPPLY DISTRIBUTOR**  
for Bulletin #47, or write .....

Over 50 Years of Welding and Safety  
**THE FIBRE-METAL PRODUCTS COMPANY**  
CHESTER, PENNSYLVANIA

THE WORLD'S LARGEST MANUFACTURER  
OF SUPERIOR PROTECTIVE EQUIPMENT

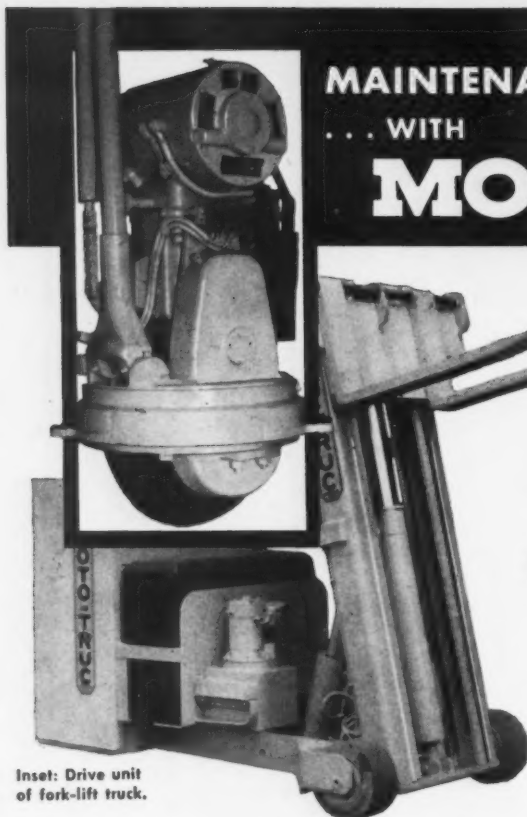
INSULATED BUREKA HOLDERS  
HEAD REST GOGGLES • WELD CLEAN-  
ING HAMMERS • FRESHAIR SYSTEMS  
FACE SHIELDS • SAFETY HELMETS



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**WESTERN INDUSTRY — September 1957**

◀ For more details, adv. opp. pg., circle No. 16 on Reader Service Postcard



Inset: Drive unit of fork-lift truck.

MAINTENANCE COSTS

... WITH

**MOLUB-ALLOY**

*cut 85%*

*"Exhaustive tests have proved that only this lubricant can save us this kind of money"*

says LeRoy A. Winter.  
Superintendent  
The Moto-Truc Company  
Cleveland, Ohio



"We tested dozens of lubricants to solve a problem costing us hundreds of dollars in service calls. Leaking oil seals were damaging brake linings. Replacement had become an unavoidable expense that we had to bear throughout our Nationwide distribution."

#### Trouble stopped completely

This leading manufacturer of electrically operated fork lifts solved the problem by packing all gear units with MOLUB-ALLOY SAE 90 which has completely eliminated all maintenance trouble due to oil leakage. Units run quieter, smoother. Saving in labor and materials is very considerable.

#### Friction reduced in gear drives

Using MOLUB-ALLOY, power consumption runs up to 10 amps less with the same load, greatly extending battery life. The Moto-Truc Company

officially recommends the use of MOLUB-ALLOY SAE 90 to all purchasers of their units.

MOLUB-ALLOY is the only lubricant incorporating self-lubricating metallic solids which improves the finish of bearing surfaces through plating, reduces friction, protects against wear and stays in place up to 5 times longer than ordinary grease.

In every field of industry MOLUB-ALLOY is saving thousands of dollars by extending lubrication cycles and drastically cutting down time and parts replacement.

#### DISTRIBUTION FROM COAST TO COAST

Mail coupon today for literature and name of local distributor. National acceptance through unmatched experience. Imitations may prove to be costly experiments.

#### REDUCE MAINTENANCE COSTS

with a

**MOLUB-ALLOY**

*Program of Metallic Lubrication*

**IMPERIAL OIL and GREASE CO., INC.**

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Copyright 1957 Imperial Oil and Grease Co., Inc.

IMPERIAL OIL AND GREASE CO., INC.  
6505 Wilshire Boulevard, Los Angeles 48, Calif.  
Please mail immediately further information on MOLUB-ALLOY as checked.

☐ Bearing lubricants ☐ High temperature lubrication  
☐ Gear lubrication ☐ General lubrication

Name ..... Position .....

Company .....

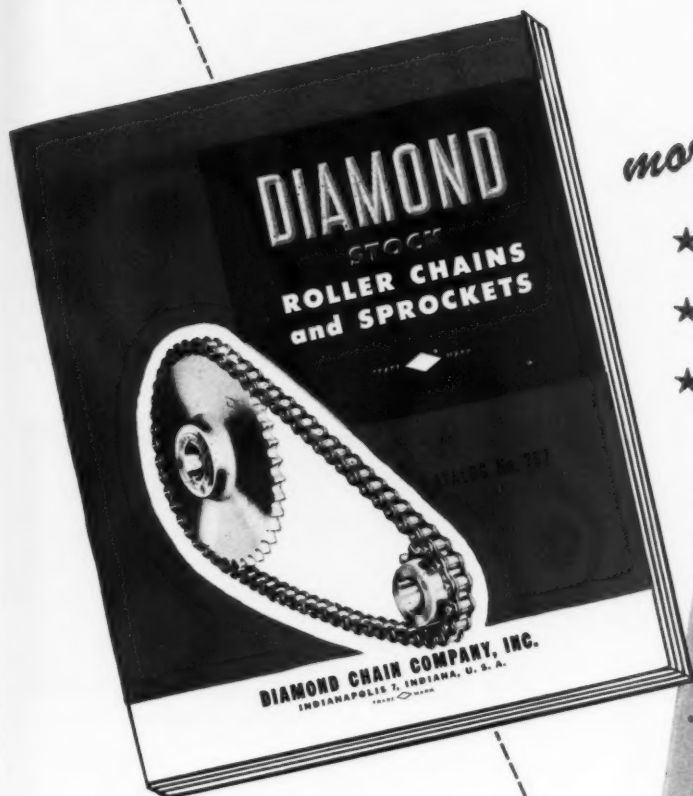
City.....Zone.....State.....

Dept. 37-J

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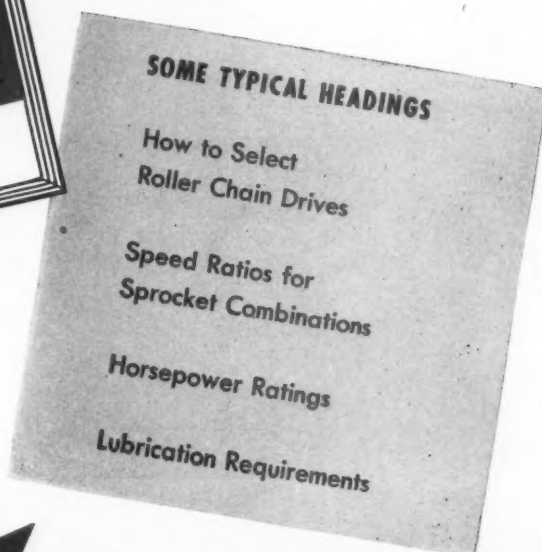
WESTERN INDUSTRY — September 1957

# THIS NEW DIAMOND CATALOG IS READY TO HELP YOU NOW



*more helpful than ever!*

- ★ MORE sprocket sizes
- ★ NEW taper bushed shaft couplings
- ★ MORE sprocket information



## CATALOG 757

is packed with charts and tables  
to make correct selection easy!

Selecting stock Diamond Roller Chain and Sprockets from this big 68-page catalog saves you time and saves you money.

Catalog 757 lists additional sizes of roller chains and sprockets carried in stock by Diamond and Diamond Distributors. Your nearest Diamond Industrial Distributor is listed for your convenience. DIAMOND CHAIN COMPANY, Inc., Dept. 606, 402 Kentucky Ave., Indianapolis 7, Ind. *Offices & Distributors in All Principal Cities.*

THE TRADE MARK  IS ON EVERY LINK



## MAIL COUPON TODAY!

Diamond Chain Company, Inc.  
Dept. 606, 402 Kentucky Ave.  
Indianapolis 7, Ind.

☐ Please send me a copy of the new  
Diamond Catalog No. 757

Name

Company Name

Address

City  Zone  State

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See Directory listing page 116



### SHOW 'EM HOW TO DO IT!

That's the idea of the San Francisco-Oakland chapter of the American Institute of Industrial Engineers as it launches a series of Work Simplification television programs at 8:00 p.m. on Tuesday evenings over Station KQED (Channel 9).

Aimed at showing how industrial engineers can save time and money, the programs (with featured participants) are as follows:

Sept. 3—"An Introduction to Work Simplification"—**Frank Hoffman**, C & H Sugar Co., and **Robt. L. Knighton**, Columbia-Geneva Steel Division, U. S. Steel Corp.



"THERE'S ALWAYS A BETTER WAY"—**Robert L. Knighton**, Columbia-Geneva Div., U.S. Steel Corp. (left) and **Frank Hoffman**, C and H. Sugar Co., demonstrate the theme of the television series on their show, "An Introduction to Work Simplification" (see above). The television series is amply spiced with props, charts and demonstrations of industrial engineering applied to work simplification.

Sept. 10—"Resistance to Change"—**Dr. J. G. Phelan**, industrial psychologist, Bechtel Corp.

Sept. 17—"The Hidden Power of Design"—**Walter Lander**, Walter Lander and Associates.

Sept. 24—"An Introduction to Motion Study"—**Chuck Ebeling**, General Foods Corp., and **Warren Wiesenfeld**, Coast Manufacturing & Supply Co.

Oct. 1—"Pinpointing Your Work Simplification Problems"—**Robert Hodson**, Montgomery Ward & Co.

Oct. 8 and 15—"The Magic of the Flow Chart"—**Charles Differding**, Mare Island Naval Shipyard.

Oct. 22 and 29—"Systematic Approach to Simplification"—**Don Sleeper** and **Duane Davis**, Columbia-Geneva Division (Pittsburg) of U. S. Steel Corp.

Nov. 5—"Paperwork Simplification"—**Dan Meyers**, Standard Register Co.

Nov. 12 and 19—"The Planning of Functional Layouts"—**Robert Whited**, Marchant Calculators, Inc.; **Ray**

**Kahn**, Yale & Towne; **Millward Harris**, Friden Calculators.

Nov. 26—"Work Simplification in the Home"—**Mrs. Virginia Spaeth**, American Heart Association.

Dec. 3—"Junior Achievement and Work Simplification"—**Jack Frost**, C & H Sugar Co., and **Frank Taylor**, Oliver Tire & Rubber Co.

Dec. 10—"Applications of Work Simplification"—(various panelists).

Director of the industrial engineering television series is **Chuck Ebeling**, General Foods Corp.

**THE LOS ANGELES SECTION** of the American Society for Quality Control elected **Dr. Leo A. Aroian**, member of the technical staff, Missile Division of Hughes Aircraft Co., as chairman for the 1957-1958 term. **Dr. Aroian** served as vice chairman for the past year.

Elected to serve as vice chairman with him was **Howard C. Todt**, chief, quality control analysis, Autonetics, a division of North American Aviation, Inc. **Halmond L. Park**, quality control engineer, Aerojet General Corp., was re-elected treasurer.



**MEMBERSHIP CHAMPS**—The Los Angeles chapter of the American Material Handling Society (above) and the Northern California Chapter (below) won national awards for setting a gain in membership records of 1957 over 1956. Above, **William Goninan**, past president of the Los Angeles chapter, admires the award attached to the chapter banner. Los Angeles had a 40% gain in membership. Below, **Harry Wood** (left), past president of the Northern California chapter receives the congratulations of **Ed Sullivan**, Western regional vice president of the AMHS, receiving his chapter award. Northern California recorded a 24% gain in membership.



### WESTERN MEETINGS YOU SHOULD PLAN TO ATTEND

Oct. 14-18—**INTERNATIONAL INDUSTRIAL DEVELOPMENT CONFERENCE**, San Francisco. Sponsored by Time-Life International and Stanford Research Institute. Further information may be obtained from conference secretary, **Edward S. Prentice**, at Stanford Research Institute, Menlo Park, Calif.

Oct. 15-17—**38TH PACIFIC COAST MANAGEMENT CONFERENCE**, regional conference, Claremont Hotel, Berkeley, Calif. Contact **Everett Van Every**, secretary-manager, Western Management Assoc., 2180 Milvia St., Berkeley, Calif.

Oct. 24-25—**AIRCRAFT ELECTRICAL SOCIETY**, 14th annual display of aviation electrical equipment, Pan Pacific Auditorium, Los Angeles.



Dacron Cords Give

*Gilmer*

Super Service

V-Belts

40% More Pull!

HERE'S THE NEW HEAVY-DUTY V-belt by Gilmer—built with load-carrying cords of "Dacron\*" and easily identified by a distinctive red jacket!

Here's the V-belt that transmits up to 40% more power than standard V-belts...has longer flex life...absorbs greater shock loads...has more stretch-resistance...is practically unaffected by changes in humidity.

New multiple-belt drives designed to use this *Super Service* V-belt permit savings in both drive cost and space, since smaller sheaves, fewer belts and less maintenance are required. These narrower drives also make possible reduction of shaft overhang, and the amount of overhung weight.

Use on existing multiple drives is especially recommended where it is desirable to raise the capacity or safety factor, or to increase ability to absorb shock loads, without enlarging the drive.

A worthy successor to the famous black-jacketed Super Service V-Belt, the new belt's distinctive red color insures against confusing it with other V-belts, guards against mixing with other types on the same drive, and serves as a guide in storing and reordering. The new "Dacron" tensile section is cushioned on bottom rubber especially developed to compress and release under higher tension with minimum heat generation.

The new Gilmer Super Service V-Belt is made in all standard multiple-drive sizes. Order from your nearby NYB&P-Gilmer Distributor. Consult your classified telephone directory for his name.

\*Du Pont's polyester fiber



V-BELTS AND "TIMING®" BELTS



NYB&P INDUSTRIAL RUBBER PRODUCTS

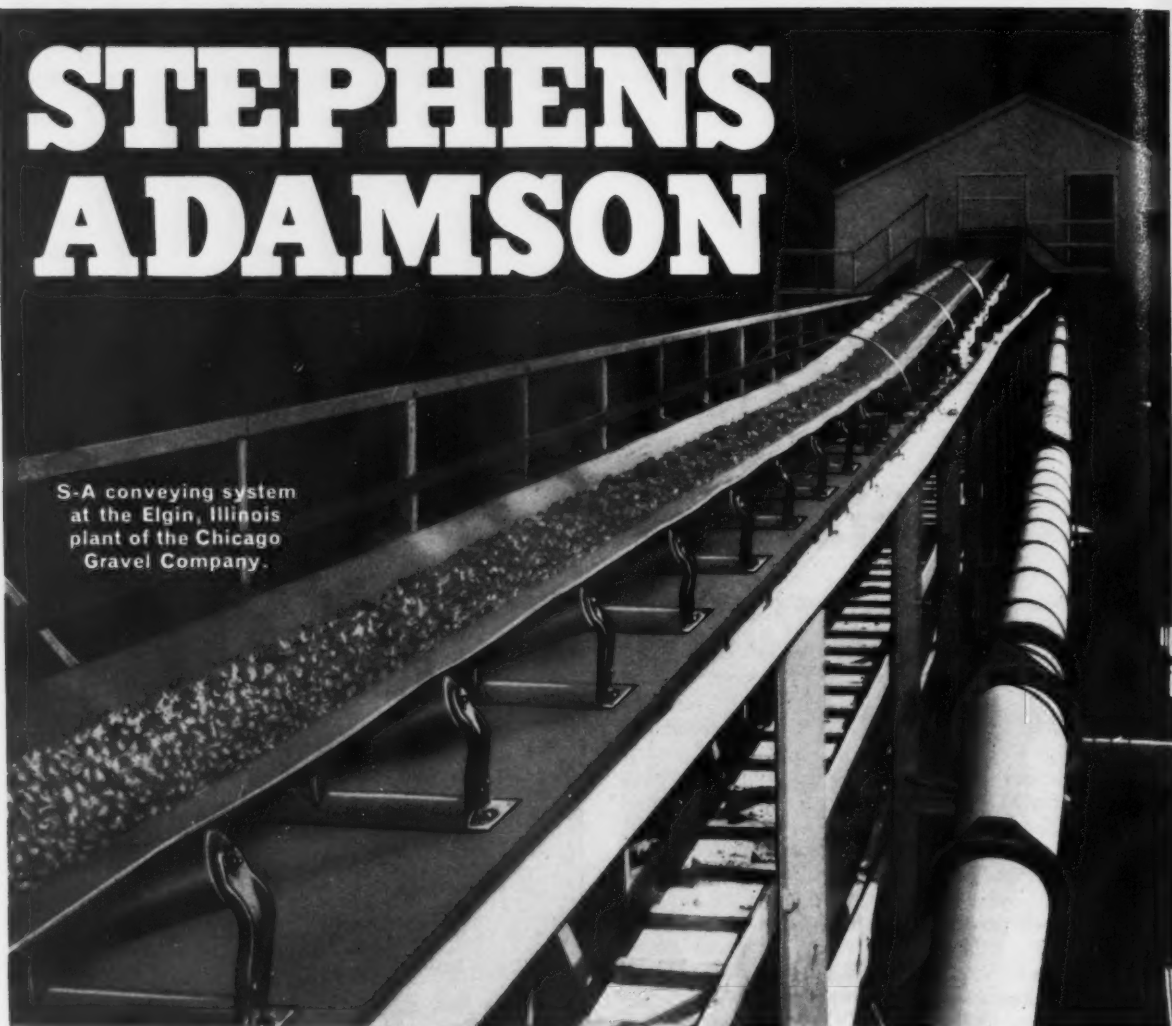
**NYB&P**

**NEW YORK BELTING & PACKING CO. 1 Market St., Passaic, N. J.**

Proving for 111 years that **QUALITY COSTS LESS!**

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# STEPHENS ADAMSON



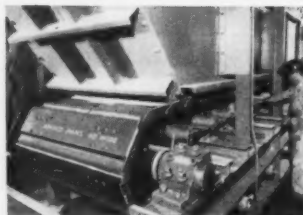
S-A conveying system  
at the Elgin, Illinois  
plant of the Chicago  
Gravel Company.

## the ***BIG NAME*** in rock product conveyor systems

Pit and quarry operations are the roughest, toughest, testing grounds in the world for mechanized equipment and here's where you'll find those big burly S-A engineered conveying systems proving their real quality. Here they take terrific punishment, and come back for more year after year. This is where the system has got to be good or be pounded into submission fast.

This is where STEPHENS-ADAMSON has earned its big name. It's where over fifty years of experience and sheer excellence of engineering and product design pays off.

A STEPHENS-ADAMSON sales engineer is in your area. He is always ready to serve you and prove that the rock handling problem doesn't exist that can't be solved the S-A way.



S-A builds feeders in many styles and sizes. They range from heavy duty AMSCO feeders to rotary feeders for pulverized materials.



S-A screens are made in numerous types—vibrating—revolving—shaking—for screening, scalping, and washing crushed stone or gravel.



### STEPHENS-ADAMSON MFG. CO.

85 RIDGEWAY AVENUE, AURORA, ILLINOIS  
LOS ANGELES, CALIFORNIA BELLEVILLE, ONTARIO

S-A manufactures a wide range of material handling products in three complete plants in U. S. and Canada.

Belt Conveyors  
Belt, Pan & Plate Feeders  
Ship Loading Boom Conveyors  
Stacking Conveyors  
Storage & Reclaiming Systems  
"Natural Frequency" Vibrating Conveyors  
REDLER Conveyor-Elevators  
ZIPPER Conveyor-Elevators

Conveyor Belt Cleaners  
Headshaft Holdbacks  
Grizzlies & Screens  
Centrifugal Pilers  
Bin Gates & Tunnel Gates  
Car Pullers & Spotters  
Bucket Elevators  
Skip Hoists  
SEALMASTER Ball Bearing Units

• Write for a bulletin on any of the above.

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WESTERN INDUSTRY — September 1957



**GET THE MONEY  
OFF THE FLOOR  
AND INTO  
YOUR POCKET**

Don't believe it, do you? But it's 8 to 5 you've got money... real hard cash, on YOUR floors, too.

Figure it this way. If you're not getting top efficiency out of the products your janitor uses... or top efficiency out of your janitor himself... you're losing money. Maybe BIG MONEY, that belongs in your pocket.

Let EASTERDAY show you how to save that wasted cash. Find out about Easterday's College of Janitorial Knowledge. It's FREE! On the job training by Easterday. Just fill out the coupon.



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**EASTERDAY  
SUPPLY COMPANY**

Los Angeles • 1150 West 4th Street  
Portland • 216 North Hancock Street  
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Twelve Pacific Coast Warehouses Providing Everything for Sanitation and Maintenance

MAIL THIS COUPON FOR FREE CATALOG  
EASTERDAY SUPPLY COMPANY WI-9-37  
Catalog Office: 1150 W. 4th St., Los Angeles  
Please send me details on how our janitors can  
participate in an Easterday Janitorial Class.  
We employ \_\_\_\_\_ janitors.

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Position \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

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... use our "off-the-shelf" service for the products of these leading manufacturers

**Dodge Mfg. Co.**

Timken—Spherical Roller—Ball Bearing—Babbitted & Bronzait Pillow Blocks and Take Ups—Taper Lock Sheaves—V-Belts—Air & Mechanical Clutches—Para-Flex Shaft Couplings and Collars—Flexidyne Drives and Torque Arm Speed Reducers—Flat Belt and Conveyor Pulleys.

**Gerbing Mfg. Co.**

Roto-Cone and Vari-Cone Drives.

**Lufkin Foundry & Machine Co.**

Herringbone Speed Reducers.

**Morse Chain Co.**

Roller Chain—Silent Chain—HyVa Chain & All Types of Sprockets—DSC & DRC Flexible Couplings—Morflex Couplings—Marine Couplings—Flexible Drive Shafts—Friction Clutches—Torque Limiters—Over Running and Indexing Clutches.

**Moline Malleable Iron Co.**

Malleable & Promal—Detachable—Pintle—Combination—Ley Bushed—Roller Top & Long Link Conveyor & Drive Chains—Malleable Castings.

**Ohio Gear Co.**

Spur—Bevel—Miter—Worm & Helical Gears—Speed Reducers.

**Hewitt Robins, Inc.**

Troughing Rolls & Idlers—Vibrating Screens—Transmission & Conveyor Belts—Mechanical Rubber Products—Hose & Couplings.

**Lewellen Mfg. Co.**

Variable Speed Pulleys and Transmissions.

**U. S. Rubber Co.**

Timing Belts & Pulleys.

**U. S. Electrical Motors, Inc.**

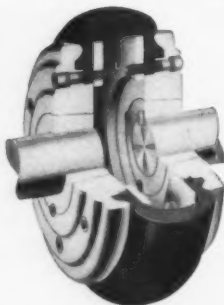
Motors—Synco Gear Motors—Vari-Drives—Motor Controls.

**Warner Electric Brake & Clutch Co.**

Electric Brakes & Clutches.

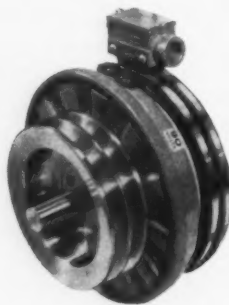
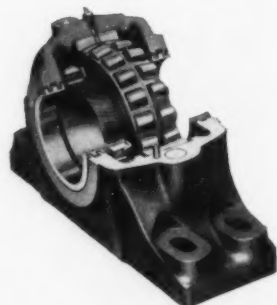
# NEW PRODUCTS ADDED

To Better Serve You With  
Everything for the Mechanical Transmission of Power



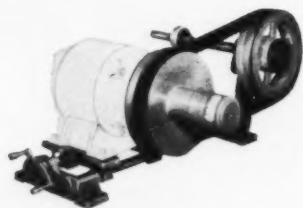
**Dodge Para-Flex Flexible Coupling**  
A truly flexible coupling—angular, parallel, torsional and end float

**Dodge Sphere-Align Micro Mount Bearings**  
America's newest Spherical Roller Bearings



**Gerbing Vari-Cone and Roto-Cone Drives**  
For varying speeds economically

**Warner Electric Brakes and Clutches**  
Pushbutton control for revolving shafts



## MACHINE SHOP & FABRICATON

Complete facilities for the manufacture of all types of Gears and Sprockets as well as general machine work, steel fabrication, welding and flame hardenings. If you need Power Transmission Equipment we have it or make it.

*The Best in Power Transmission Always in Stock*

# J. W. MINDER CHAIN & GEAR CO.

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ADams 3-7221

307 S.E. Hawthorne Blvd.  
Portland 14, Oregon

BEImont 6-1131

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WESTERN INDUSTRY — September 1957



# STANDARD ENGINEER'S FIELD REPORT

PRODUCT CHEVRON ROOF COATINGS  
PAUL SCHATZ FURNITURE CO.  
FIRM Portland, Oregon

## Chevron Coating stops wall moisture—no leaks in 5 years



**Concrete Wall** of this Portland, Oregon, furniture store, sealed with Chevron Aluminum Asbestos Coating, is still weatherproof after 5 years' exposure to the full force of prevailing winds and rainstorms. Store owner, Paul Schatz (above), says, "This product has given us excellent moisture protection for 5 years, with an exceptionally attractive appearance."

Building was completed in 1949, later developed several leaks in west wall which caused considerable damage to interior. In 1951, Chevron Aluminum Asbestos Coating was applied to entire 50 by 150-foot area of this wall. Product immediately stopped all leaks and none have developed since. Interior surface has remained dry, shows no evidence of stains or dampness.



For More Information about Chevron Roofing Products, call your Standard Representative, or write 225 Bush St., San Francisco 20, California.

TRADEMARK "CHEVRON" AND "CHEVRON" DESIGN REG. U.S. PAT. OFF.

### STANDARD OIL COMPANY OF CALIFORNIA

WESTERN INDUSTRY — September 1957

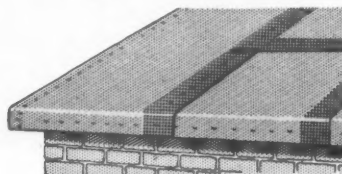


**Closeup of Wall** shows how free-flowing Chevron Aluminum Asbestos Coating penetrates porous concrete, forms moisture-proof "blanket" over entire surface.



**Prior to Application** of Chevron Aluminum Asbestos Coating, wall leaks had ruined costly interior decoration, subjected large inventory of fine furniture, like piece shown by Mr. Schatz (above), to damaging moisture.

**How Chevron Roof Coatings** weatherproof prepared-paper, metal, concrete, brick



- Coating flows freely, adheres firmly, tightly seals cracks, seams, nail holes • Stays pliable, reflects heat—may be sprayed, brushed or applied with squeegee.

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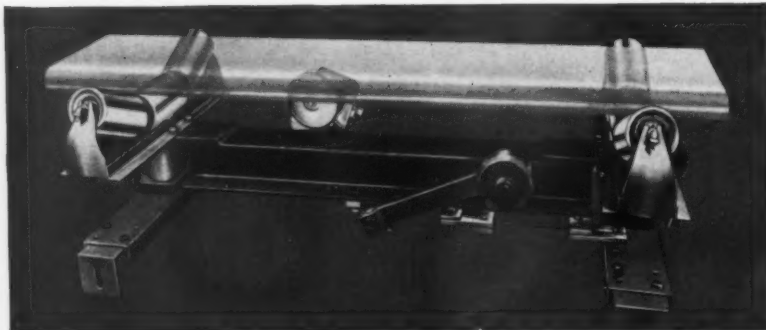
## Weigh it on the run ...with electronics

There are no labor costs to be charged against weighing when you incorporate a Fairbanks-Morse electronic scale in your belt conveyor system. The belt will be moving anyway, and might as well be accumulating the record of passing weight in the process.

Because it is electronic, the registering instrument of the new Fairbanks-Morse Electronic Belt Conveyor Scale can be located remotely—for instance in the office with the rest of your business and accounting machinery.

Accumulated weights are read on the remote instrument in digital figures, and there are other indicators to give you a running check on the general efficiency of your conveyor operation. A meter shows percentage of load at the given moment; another shows the rate of tonnage movement per hour.

There's a new bulletin, No. ED-12, on the Fairbanks-Morse Electronic Belt Conveyor Scale. Please write for it today. Fairbanks, Morse & Co., Dept. WI-9, 600 South Michigan Avenue, Chicago 5, Illinois.



### FAIRBANKS-MORSE

a name worth remembering when you want the BEST

SCALES • PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MAGNETIC

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*Case in point* Tiger Brand Specialist Hazen White (left) answers a wire rope question asked by Hopper Machine Works' Design Engineer, Hampton Lee. This Bakersfield, California, firm manufactures the famous Hopper Hoist—an oil well servicing and drilling rig. The company has used Tiger Brand Wire Rope on their inside cranes for eight years.

## *Count on the man from* **TIGER BRAND...**

You won't find his name on your payroll, but "the man from Tiger Brand" can be counted on like one of your own specialists, for these men *are* specialists...skilled in helping you get longer and more profitable service from your wire rope and rope-using equipment.

Next time you have a wire rope problem, get in touch with "the man from Tiger Brand." You will find him ready and willing to be of service. No obligation, of course.

*First in quality and service*

## **USS TIGER BRAND Wire Rope**

United States Steel Corporation • Columbia-Geneva Steel Division  
120 Montgomery Street, San Francisco 6  
... with fully staffed service facilities in 10 other western cities



**UNITED STATES STEEL**

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## LAY THAT PISTOL DOWN PAL

There's an easier way out of your bearing troubles

Russian roulette may seem to be the easiest and quickest way out when bearings start to go and production starts to stop. But quicker still is a replacement from an authorized **SKF** distributor. He's the man to see for *all* types of anti-friction bearings and pillow blocks, and he's the man who will give you prompt service 24 hours a day. This factory

trained specialist is ready to help you select the right bearing for the job. His broad experience in solving problems of maintenance means proper guidance in protecting your bearings for longer life. Doing business with the right distributor—the **SKF** distributor—is good business and good assurance of getting the bearings you need when you need them.

7746



# SKF®

### EVERY TYPE—EVERY USE

- Ball Bearings
- Cylindrical Roller Bearings
- Spherical Roller Bearings
- Tapered Roller Bearings (Tyson®)

\* Reg. U.S. Pat. Off. Tyson Bearing Corporation

**SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.**

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**WESTERN INDUSTRY — September 1957**

For more details, adv. opp. pg., circle No. 28 on Reader Service Postcard ➔





# SAVES 4 WAYS

## with WEBB Conveyors...



This Webb conveyor installation, processing RCA Colorama TV picture tubes, is a perfect example of what can be accomplished with modern conveying techniques. In addition to the obvious economies realized with mechanized materials movement, these five conveyors, totaling 2385 feet, have provided RCA with four important benefits:

1. **Save Production Time** . . . conveyors dip down at every work station to an efficient work level, bringing the material to the worker . . . minimizing manual handling.
2. **Paced Production Flow** . . . conveyors carry materials to each operation at a predetermined rate, aiding in control of production rate.
3. **Overhead Live Storage** . . . stock-piling on floors eliminated, providing greater productive area and increasing production potential of the plant.
4. **Greater Employee Safety** . . . cleaner, uncluttered work areas because materials travel and are stored overhead.

Your plant can realize these same benefits, and others as well, with modern conveyerization techniques. For more information, or for engineering service, write or call Webb today.

### JERVIS B. WEBB CO. of CALIFORNIA

Specialists in Custom Conveyor Systems

9301 RAYO AVENUE  
SOUTH GATE, CALIFORNIA



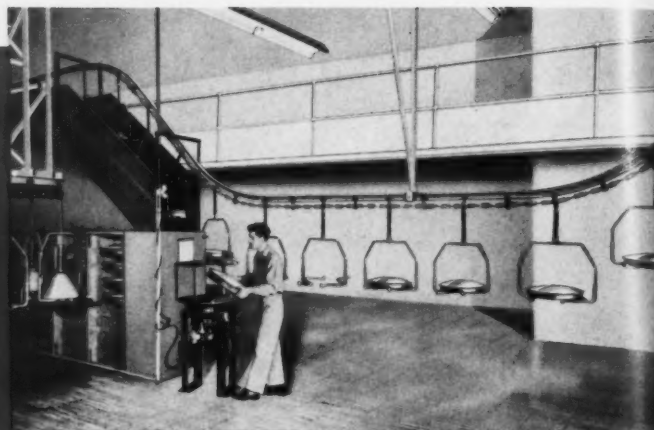
#### OTHER WESTERN OFFICES

2166 MARKET ST., SAN FRANCISCO 14, CALIFORNIA  
4305 EMERSON ST., SEATTLE 99, WASHINGTON  
22 WEST 2ND ST. SOUTH, SALT LAKE CITY, UTAH



FACTORIES: DETROIT • LOS ANGELES • ATLANTA • HAMILTON, ONTARIO, CANADA • ENGLAND • FRANCE • BELGIUM • AUSTRALIA

# Webb Conveyors at RCA...



At the start of the RCA Colorama TV picture tube processing and assembly operations, the cap assemblies are taken from the aluminizing unit and placed on Webb trolley conveyor "A" at station 1. This conveyor transports the caps automatically to station 2 where they are removed and placed in a Lehr bake-out oven. After traveling through the oven, caps are inspected and placed on conveyor "B" at station 3.

The caps are then automatically carried overhead to station 4 where they are placed on a vibrator (see photo above) before being welded to funnel assemblies at station 5. Funnel assemblies are processed along the route of conveyor "D". After welding, the assemblies are placed on conveyor "C" at station 6 and carried to the mount sealing machine at station 7. This machine automatically seals the electron gun in the bulb. Several assemblies at one time rotate merry-go-round fashion in the sealing machine fixture.

Tube assemblies are again placed on conveyor "C" and con-

veyed to the straight line exhaust machines. Following the exhaust operation, tubes are based, aged and tested. Any tubes that fail to meet the RCA quality standards are sent to salvage on conveyor "E". The salvage conveyor carries rejects through several reclaiming operations.

Throughout the RCA plant, conveyors dip down at each work station to make materials available at a convenient height and location. Between stations, conveyors automatically carry materials overhead... keeping aisles clear, assuring maximum productive floor area. Each of the five conveyors carry a recirculating inventory of parts, thus keeping parts storage overhead.

The Jervis B. Webb Company manufactures all types of conveyors... from simple straight line units to complex systems. Webb conveyors can be designed to carry all types of materials... from toothpicks to logs, from raw metal to 40,000 lb. tractors. Whatever your materials, a Webb conveyor can convey them... at lower production cost, with greater production efficiency and with more effective production control.

**If your problem is modernizing  
production flow... call a Webb Engineer**

**JERVIS B. WEBB CO. of CALIFORNIA**



Specialists in Custom Conveyor Systems

**9301 RAYO AVENUE  
SOUTH GATE, CALIFORNIA**



### *Saves operators time and work*

Pictured is a 12-ton die-cast frame made by Lester Engineering Co., Cleveland. Finish production requires up to two days of continuous sanding. This company standardized on the SKIL Model 852 Disc Sander because it's lighter and better balanced. Mr. Charles Jennings, foreman, says the SKIL sander saves his men plenty of time and work on one of these die castings.



### *Saves 75% fastening time*

On mass production of automatic cleaning units, American Monorail, Cleveland, replaced the "Yankee Type" fastening method with a SKIL Model 346 Driver. The result: time to complete this operation was cut from 12 to 3 minutes—a 75% savings. Overhead suspension operation has proved simple and easy for women operators.

## How metalworkers **SAVE** with SKIL Tools



### *Cuts tubes by the bundle*

In the photo above National Copper and Smelting, Cleveland, proves the versatility of the SKIL Model 450 Radial Saw. Formerly, the bundle was separated and two pieces cut at a time. Now, 75 pieces of tubing—a bundle—are cut to working pieces in *two minutes*—a terrific savings in time and handling.



### *SAVE WITH NEW SKIL 1/4" DRILL*

All-new SKIL 1/4" Model 134 standard-duty drill. 40% more powerful. New compact design. Easy-to-handle. No matter what you have to drill, drive, sand, saw or grind, there's a SKIL tool to do the job faster, better, cheaper. Let your SKIL distributor show you why. Or use the coupon below.



Send for  
**FREE catalog**  
on power tools

SKIL Corporation, Dept. WCT-97  
5033 Elston Avenue  
Chicago 30, Illinois

In Canada:  
3601 Dundas Street West  
Toronto 9, Ontario

\_\_\_\_ Please send me name of nearest distributor.

\_\_\_\_ Please send me FREE booklet on SKIL power tools.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

Made only by SKIL Corporation, manufacturer of famous SKIL and SKILSAW products,  
5033 Elston Avenue, Chicago 30, Illinois. In Canada: 3601 Dundas St. West, Toronto 9, Ont.





## "Local Hot Spot" gets cool treatment from **COLT** engineers

Intense radiant heat from molten metal in the die casting shop at Pioneer Diecasters in Los Angeles made working conditions miserable for the operators. Colt engineers were called in, discovered that existing windows and ventilators were too high to benefit these workers, and recommended installation of Colt clear opening louvered ventilators, at low level. Relief was obvious and immediate. In addition to being surrounded by cool air, the operators could now see out, lost that cramped, cooped-up feeling.

If your plant has a bothersome "hot spot" that saps workers' energy and efficiency, it's time to call in Colt. A survey of your premises is free and without obligation. You'll find that Colt's wide variety of ventilators are quality products and priced competitively.



Colt clear opening louvered ventilators installed at Pioneer Diecasters, Inc., of Los Angeles. Engineered to take advantage of prevailing winds, louvers may be closed to reduce intake as needed.

*Read what Pioneer Diecasters, Inc. of Los Angeles have to say:*

*"Working conditions in our die cast shop were almost intolerable until Colt ventilators gave the operators relief from intense radiant heat by actually surrounding them with cool air. We're sold on Colt!"*



### THE COLT SYSTEM OF NATURAL VENTILATION

*Write for Free Technical Manual giving full details of the Colt System and equipment used.*

# COLT VENTILATION OF AMERICA, INC.

4652 Hollywood Boulevard, Los Angeles 27, California • NOrmandy 1-0261

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WESTERN INDUSTRY — September 1957



**ATHEY PRODUCTS** builds rugged,  
hard-working  
rear dump trailers..



**DENISON**  
hydraulic pumps  
give the power punch



*Rear dump trailer manufactured by Athey Products Corp., Chicago, Ill., incorporates 3-stage hydraulic rams to dump the load . . . with power provided by a Denison 2000 psi hydraulic pump.*

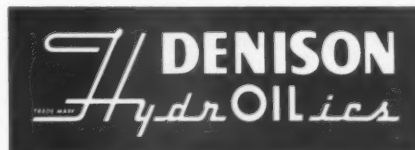
They're rugged workers . . . these rear dump trailers manufactured by Athey Products Corporation. They're built to take the toughest punishment of today's high-speed hauling and earth-dumping jobs. To insure dependability, they're powered by Denison hydraulic equipment.

Capable of carrying loads up to 34 tons, Athey rear dump trailers incorporate powerful 3-stage hydraulic hoists which tilt the body as much as 60° to dump the contents quickly.

Athey selected a Denison 2000 psi balanced vane hydraulic pump to furnish the power for the hydraulic system. As so many manufacturers of construction equipment have found, Denison hydraulic pumps provide the ultimate in power efficiency . . . require minimum maintenance . . . last longer.

Look for the Denison name on hydraulic components in your construction equipment. It's your assurance of highest quality and dependability. Denison Engineering Division, American Brake Shoe Co., 1184 Dublin Rd., Columbus 16, Ohio.

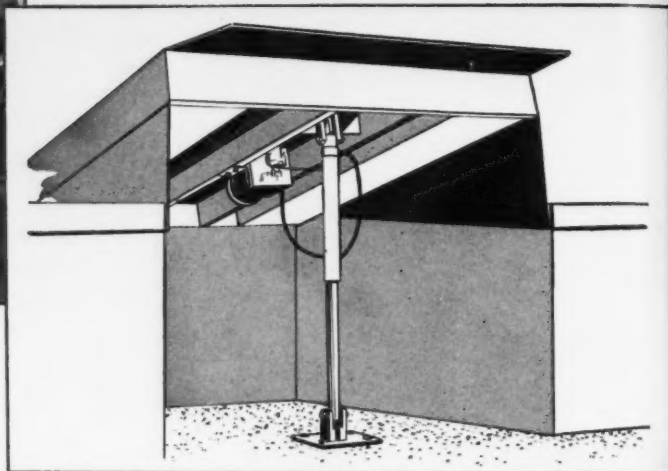
Denison and Denison HydrOILics are registered trademarks of Denison Eng. Div., ABSCO



*Your guide to better performance in construction equipment*

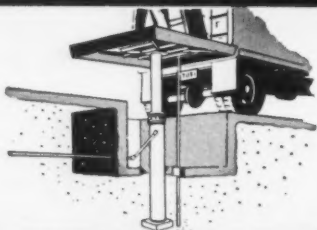
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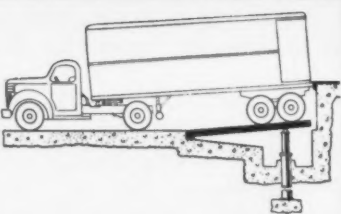


## UNIQUE DESIGN AND RUGGED CONSTRUCTION

### GLOBE PLATFORM LIFT



### GLOBE TRUCK LEVELER



## OF GLOBE TRANS-O-MATIC RAMPS ASSURES SUPERIOR PERFORMANCE...ECONOMY

There's no waiting to "bridge the gap" for loading and unloading when you use Globe Trans-O-Matic Ramps. These hinged Ramps are instantly in position... provide a strong, smooth bridge from dock to truck bed regardless of difference in levels.

The unmatched design and sturdy construction of Globe Trans-O-Matic Ramps assure you long, satisfactory performance. High load capacity—up to 20,000 lbs. for either cross-over or roll-over—is made possible by Globe's box and channel design. Ramp lip "floats" with vehicle bed 15" up or down. Automatic safety lock instantly holds Ramp in fixed position if truck pulls out accidentally... prevents dumping, injury or damage. Two models, either electric or air-oil, are available.

Write today to Globe Hoist Company for complete data on automatic, adjustable Globe Trans-O-Matic Ramps, and other Globe Industrial Lifts designed for faster, safer materials handling. Information is also available in Sweet's Plant Engineering Catalog.

**GLOBE PACIFIC HOIST COMPANY**  
1461 Canal Avenue  
Long Beach 13, California

WI-805M-TR

Please send me complete information on Globe Trans-O-Matic Ramps and other Globe Industrial Lifts.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

# GLOBE®

## AUTOMATIC ADJUSTABLE TRANS-O-MATIC RAMPS

PLANTS: DES MOINES—PHILADELPHIA—LONG BEACH, CAL.

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WESTERN INDUSTRY — September 1957

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# ARGON.

the gas that wanted to be alone  
...helps man to explore space

Among the various gases in the earth's atmosphere, argon is one of the rarest—and most uncongenial. It is such a poor mixer that it is never found in chemical combination with other elements.

But scientists at LINDE reasoned that, because argon doesn't combine with other elements, it could be effectively used to protect other materials from impurities and contamination.

Today, LINDE argon protects the tiny filaments in electronic tubes, helping to make rocket and jet plane mechanisms, radar, and your television set operate dependably. In the welding of metals for use in rockets, missiles, and aircraft—or in the production of titanium—argon is the "invisible curtain" protecting the metal from impurities.

LINDE argon, 99.99++ per cent pure, is as close to you as the nearest highway or railroad track. A nationwide, flexible distribution system assures satisfaction of argon requirements for the factory or the laboratory—in any volume, whenever and wherever needed.

For more than 50 years, LINDE has been extracting gases from the atmosphere... finding better methods for their practical use. If your industry, plant or shop, has a special problem involving the use of argon, oxygen, or nitrogen, or the equipment they require, LINDE can help you. For specific information, call or write your nearest LINDE office.

LINDE COMPANY, Division of Union Carbide Corporation, 22 Battery St., San Francisco 6, Calif. Offices in other principal cities. In Canada: Linde Company, Division of Union Carbide Canada Limited.

The terms "Linde" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

Linde

UNION  
CARBIDE

LINDE argon protects the filaments in electronic tubes that guide rockets into the vast reaches of outer space.



## QUALITY CONTROL REPORT

# These sparks reveal vital facts about quality control of steel

You are naturally interested in the quality of your finished products—and if you use steel in making them, you should know about the Ryerson quality controls symbolized by this spark test.

Here a skilled Ryerson inspector is checking the carbon content of a steel bar by "reading" the sparks thrown off by an abrasive wheel. It's an amazingly accurate method of making sure that you get exactly the steel you order.

And this is only one of many rigid quality controls that protect you in every purchase of steel from Ryerson stocks. For example, a heat symbol identifies every bar of alloy steel to avoid the prob-

lem of variation from heat to heat. Another example: cylinder tubing can be furnished to more accurate inside diameter through Ryerson specs controlling O. D. and I. D. instead of O. D. and wall.

The result: steel of certified quality—assured by exacting Ryerson controls, whether your product calls for carbon, alloy or stainless steels. And these quality controls become *your* quality controls in your finished product.

These are important points to remember when you specify or purchase steel. You get extra value every time you order from your nearby Ryerson plant.

## **RYERSON STEEL**

*In stock: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing, industrial plastics, machinery & tools, etc.*

JOSEPH T. RYERSON & SON, INC., LOS ANGELES—Plant: 4310 E. Bandini Blvd. Mail: Box 3817, Los Angeles 54. Phones: ANgelus 2-6141, from San Diego (no toll) ZENith 6660. SAN FRANCISCO—Plant: 65th & Hollis Sts., Emeryville. Mail: Box 188, Emeryville, California. Phones: OLYmpic 3-2933, DOuglas 2-4211. SEATTLE—Plant: 1200 4th Ave., South. Mail: Box 3525, Seattle 24. Phones: SEneca 2300. SPOKANE—Plant: North 207 Freya St. Mail: Box 2158, Spokane 10. Phone KEystone 5-1581.

... for more details, circle No. 34 on Reader Service Postcard



## The "new look" of Western plant power

**F**IVE YEARS AGO, two editors of a national power publication trekked West to spend a week here searching out noteworthy examples of industrial power equipment application. *They went back empty-handed!* Western plants in the early 1950's, they were forced to conclude, were way behind their Eastern counterparts in the modernization of plant power set-ups . . . and the misapplication of power equipment, along with the use of outmoded power systems, seemed to be the rule rather than the exception in the industrial West.

Today, the visitors from the East would be amply rewarded in their search. We have come a long way during the past half decade. Today, there *are* pace-maker plants in the West in the effective utilization of modern power equipment. This issue tells the story.

To obtain the story for you, and to make this unusual issue possible, *Western Industry* editors have spent the past four months ferreting out the best industrial power equipment utilizations of the year in the West, as represented by actual installations in new or modernized Western plants, large and small. To locate these pacemaker systems, we have talked to dozens of plant operating executives and consultants throughout the West.

Based upon their nominations and field investigation by *Western Industry* editors, we have winnowed down to eight of the most noteworthy. Here you have them, on pp. 44-84 of this issue, all under one roof in our "*Western Power Equipment Pacemaker Plant—1957.*"

Your "tour" through the Power Pacemaker Plant will, we are certain, provide you with a pocketful of ideas that you can use in planning better power equipment utilization to fit your special production needs.

Of major importance also in this issue are three "Power Equipment Know-How Libraries"—reviews of today's best technical manuals on clutches and fluid drives, electric and automatic switches, and air compressors. Your selection from these libraries is available to you free.

And, of year-long importance to you in achieving soundly planned power systems improvement in your plant will be the 32-page *Western Industrial Power Equipment Buyers' Directory*, on pages 109-140, the second edition of the only such directory published for the industrial West. Manufacturers of all types of plant power equipment—electrical, hydraulic, mechanical power transmission, etc., are listed there, along with complete where-to-buy-it data for you in all 11 states of the Western region.

Next year, we hope *your* new and modernized plant will qualify as a power equipment pacemaker!

# POWER: as supple as it is HUGE

**T**AKE A PLANT LARGER than 10 football fields (over 500,000 sq. ft.). Fill it with hundreds of different kinds of machinery, lighting systems and many other units requiring power. Then design a power system that will meet all these needs and provide plenty of room for flexibility and expansion.

This was the problem facing Marchant Calculators, Inc., when the company planned its new \$6,000,000 plant in Oakland, Calif. And Marchant feels that it has more than met the challenge with its impressive new power setup. It's big, and—like a star halfback—it has the agility and ability to get anywhere in Marchant's 10 football fields of space.

Basically, it consists of substations, distribution panels and busway duct systems feeding machines through plug-in bus duct and trolley duct.

Outstanding features include:

**1. Flexibility**—Voltages available throughout are 480, three-phase; 277, single-phase; 208, three-phase; and 120, single-phase. Hook-ups can be completed in minutes. The three main substations each have the secondary selective feature. This means that if power fails on one section of the bus, it can be restored via an alternate route in a matter of minutes with a convenient quick-switching feature.

**2. Expansion**—Substations are planned for expansion, with plenty of excess power. The Marchant plant is built so an additional story can be added and power needs of the future can easily be filled.

**3. Control**—An IBM central control system automatically controls many off-on functions. The system operates over existing wire by using high frequency signals that do not interfere with the 60-cycle power sys-

tem. Tuned receivers are responsive to these signals, providing remote switching from the central control.

**4. Lighting**—The balanced 277-volt lighting system (requires no additional transformers) maintains between 90 and 100 foot-candles in the plant. A 120-volt system maintains 65 foot-candles in offices. This will make the Marchant factory one of the best illuminated plants in the West.

**5. Safety**—No danger with this system. There are short circuit limiting fuses on distribution panels, circuit breakers on plug-in busway, fuses on machines. In switching over power from one feeder to another, a series of safety locks and keys prevents damage to equipment or danger to personnel.

Here's how the system operates:

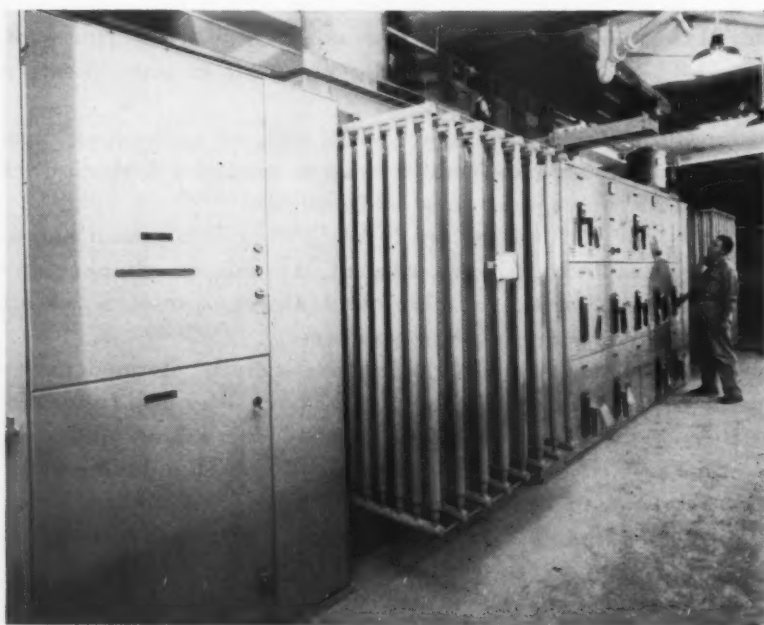
Incoming power (12,000 volts) runs through underground duct to three General Electric Co. substations. Substation No. 1 has two 1,000 kva. transformers . . . substation No. 2 has two 1,500 kva. transformers and substation No. 3 has two 1,000 kva. transformers. Total capacity of the three substations is 7,000 kva.

Power is then fed to distribution panels through General Electric feeder busway type LVD (low voltage drop). This type busway has prefabricated sections and fittings that can conform to any contour. The busway is self cooling and provides minimum power loss from substation to panel.

From distribution panels, the 480-volt, three-phase power goes through Flex-A-Power busway to feed machinery. Both Flex-A-Power and LVD busways are supported from the ceiling on hanger hooks.

The Flex-A-Power plug-in busway installation permits a direct plug-in to the bus bar. Plug-in locations are at one-foot intervals throughout the length.

Circuit-breaker power take-offs plug into the busway, wires are run through rigid conduit or flexible cable and connected to the machine starter box. Installation is completed in min-



**PARTIAL VIEW** of main substation where incoming voltage is sent to distribution panels. Note huge transformers at each side of controls.

★ **POWER PACEMAKER** award to a system that has the ability and agility of a star fullback to get anywhere in this firm's 10 football fields of space.



utes; connections can be quickly changed as individual machines are relocated.

Marchant is proud of the fact that 95 per cent of its machines can be located within 15 ft. linear distance from the plug-in units.

For assembly benches where the main power requirements are 208 and 120 volts, a trolley duct system is used. With this unit (General Electric type LTG) the power take-off runs on

a trolley. Brushes maintain continuous contact with conductors. The bus-bar housing has a  $\frac{5}{8}$ -in. slot in the bottom which provides continuous overhead outlet for power take-offs. Several power take-offs can be used with one trolley duct.

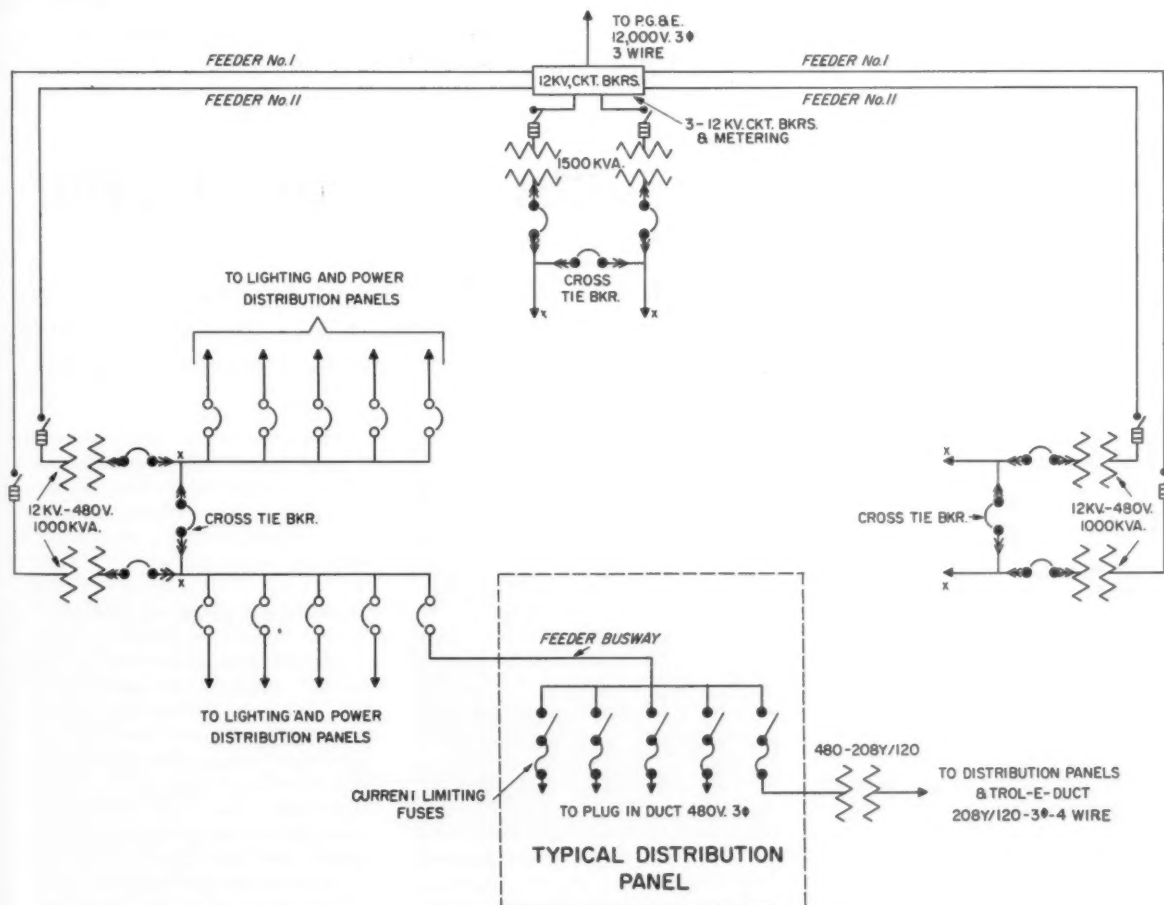
As noted, installation is quick and easy with both the plug-in and trolley busway, and both are suited for extreme flexibility.

The lighting system uses 1,000 kva.,

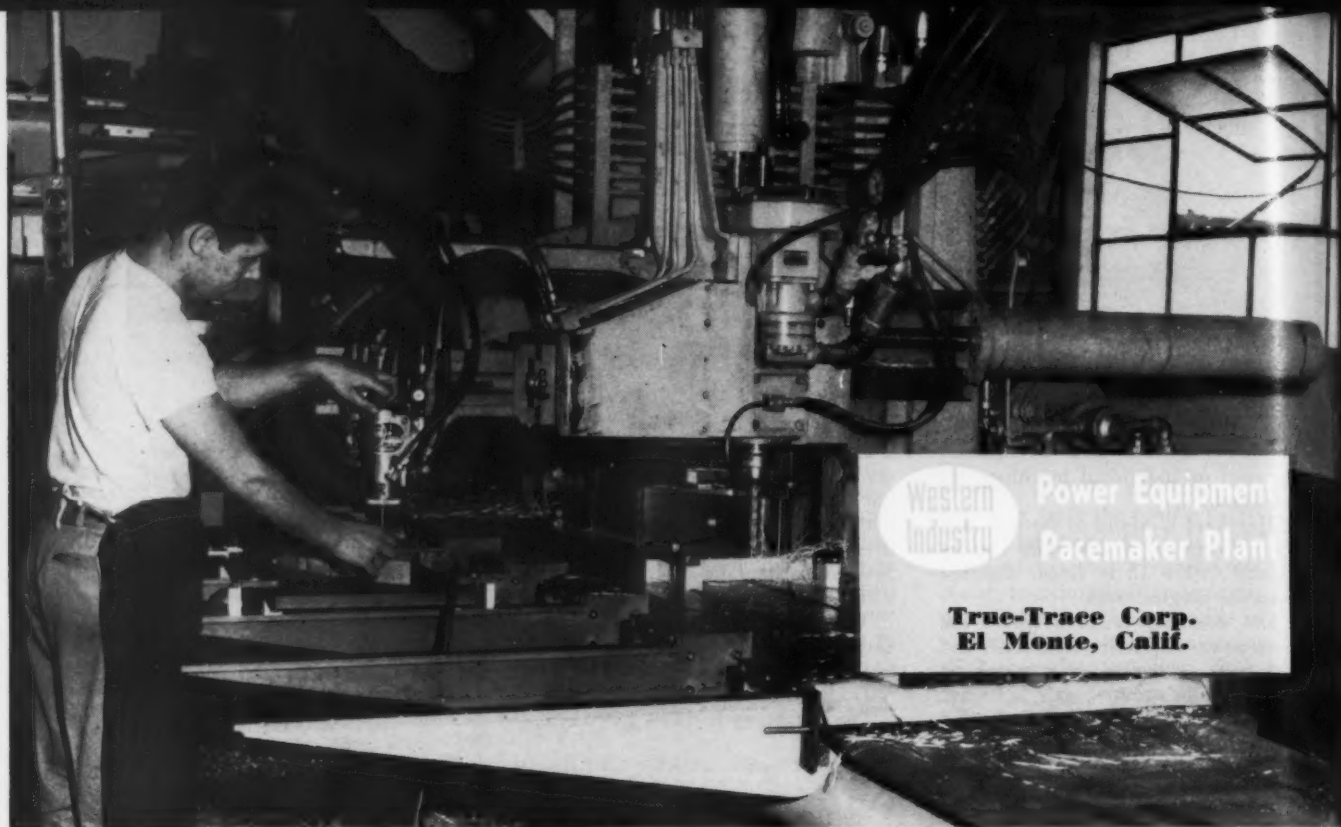
direct from substations with balanced circuits (no transformers needed). This is a 480Y/277 volts, four-wire grounded neutral system. It is a relatively new scheme for fluorescent lighting to obtain the advantages of higher voltage distribution.

Sixteen miles of fluorescent lamps (eight-foot instant lamps, end to end) provide the 90 and 100 foot-candle level of illumination in the factory

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**SCHEMATIC DRAWING** of part of Marchant's power system showing substations and distribution panel.



**TWO TRACERS** mounted on this machine, with power and control transmitted through a system of valves into hydraulic cylinders, guide it through various axes of movement in machining large wing section.

## Make it automatic with hydraulic power

★ **POWER PACEMAKER** is the Western-developed True-Trace system that converts conventional production machinery for more automatic and precise work, with conversion costs far below those of new equipment.

**H**YDRAULIC POWER for machine operation and control is nothing new. But, walk into any of two dozen or so Western plants today and you'll find some startling new ways that hydraulic power is being put to work to do production jobs faster and better.

### Bright star in plant power

In one field today, hydraulics is the bright new star of power—conversion of conventional production equipment for more automatic and more precise work. Old equipment rebuilt and provided with a "superstructure" of hydraulic valves and cylinders that in turn control and guide its operation is doing the work of especially designed machines that cost ten and

twenty times as much as conversion costs.

Of the many and various "power packages" available for machine tool installation, perhaps none will so radically alter and improve the versatility of a machine tool as much as a hydraulic tracer. That's why a "Power Pacemaker Award" goes to True-Trace Corp., El Monte, Calif.—a Western firm that has pioneered in the development of tracing equipment, and is now the largest producer of hydraulic tracers in the nation.

Here's the story of what hydraulic tracing is accomplishing today, made possible by hydraulic power, and by the ingenuity of the pacemakers at True-Trace Corp.

With tracer equipment properly installed, the ordinary production line

milling machine can be converted into a three-dimensional duplicating machine, turning out contours it would have been impossible to produce on the original machine, and doing it with the utmost precision.

### Ordinary equipment converted

An ordinary production line lathe can be converted into an automatic lathe on which the operator has only to change the parts and guide the tracing stylus during the turning cycle. Parts that simply cannot be produced on a production basis with conventional machine tools can be turned out quickly and with repetitive accuracy on a tracer-equipped machine.

Ordinarily, tracer equipment is not thought of as a "power package" ad-



dition to a machine tool, but it is just that. The tracer stylus itself is only a small part of the total tracing mechanism. The various movements of the stylus as it is guided around the part or pattern being duplicated are transmitted through a system of valves into hydraulic cylinders. The movements of these cylinders are linked directly to the machine controls. Thus the five to seven ounces of pressure used by the operator to guide the stylus are amplified into sufficient power to control the machine through its various axes of movement.

One-, two-, and three-dimensional tracers are available, utilizing one, two, or three control cylinders respectively. Each is operated by a single tracing stylus. One-dimensional tracers are often used on lathes for turning offsets (an integral cam on a shaft is a good example), or are used in conjunction with a second tracer (as will be explained later.)

Two-dimensional tracers are used primarily for two dimensional contouring work from billet, heavy sheet, or plate stock. The three dimensional tracers are operable through 360 deg. horizontally and 180 deg. vertically and can duplicate any part against which the stylus can be moved for tracing. With a three-dimensional tracer, a perfect hemisphere can be duplicated in a single setup, or a perfect sphere by using two set-ups to complete the job.

#### New machinery costs avoided

While new machine tools with tracer equipment already installed are available, a large percentage of the tracer-equipped machines in use today are conversion jobs. True-Trace Corp., has a specialized shop for installing tracer equipment on all types of machines where it is applicable.

In many cases, old and unused shop machines have been rebuilt to restore their accuracy, then equipped with tracer equipment. The end product in these cases was able to turn out work similar to that produced on huge servo-hydraulic machines costing many times as much as the conversion job.

Tracer-equipped machine tools are literally "cutting their own niche" in the precision aircraft and missiles industry. There was a day when the engineers in this industry were careful about designing complex contours that would be difficult to produce on a conventional machine tool. Then came the tracers and this day has passed. Today, many parts are intentionally designed for tracer production, including contours and cutouts that



**PROTOTYPE** fully automatic tracer in operation. Tracer stylus follows contours of work automatically, minus human guidance.

would be impractical to produce without tracer equipment. Machine shops serving this industry have been forced into using tracer-equipped machines, or must forgo bidding on many types of work.

Currently, this trend of designing parts for tracer production is spreading rapidly into many other types of industry.

In many cases, more than one hydraulic tracer has been installed on a single machine tool for producing special types of work. For instance, vertical machine movements may be obtained from a one-dimensional tracer with its stylus located some distance from the stylus operating a two-dimensional tracer which controls machine movements along the traverse and transverse axes. In a few custom-built jobs, two two-dimensional trac-



**TYPICAL TRACER-PRODUCED**, high precision aircraft part. Note complex contours and cut-outs, impractical to produce by any other machining method.

ers have been used, with the fourth tracer valve triggering a rotary or tilting machine movement, while the other three valves control the vertical, traverse, and transverse movements.

In one such multiple tracer installation, two hydraulic tracers were installed on a Pease planer with a 6 x 30-in. table, and 31 in. between the columns. The two-dimensional tracer controls the longitudinal movements of the table, and the feed of the milling head on the cross rail. This tracer itself moves on the cross rail with the milling head, but the table moves longitudinally under the tracer and milling head.

The other one-dimensional tracer controls the flow of hydraulic fluid to and from a third cylinder mounted with its axis perpendicular to the plane of the table and thus controls the depth of cut so that a constant floor level can be maintained. This converted planer can remove 75ST aluminum at the rate of 3 cu. in. per min. per hp. while maintaining a precision tolerance. Climb milling is employed.

The imagination alone limits multiple tracer applications along this line.

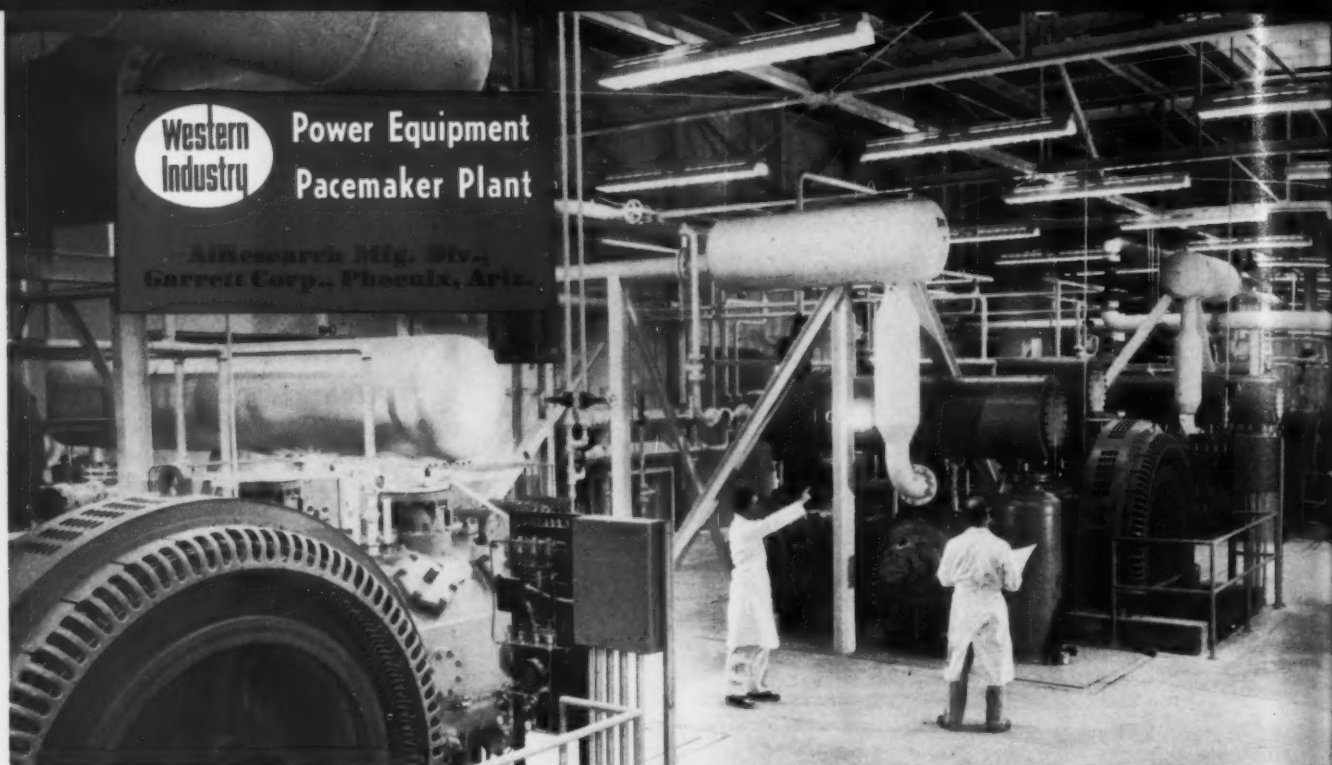
#### Complex patterns duplicated

In most precision tracer work, a 1:1 size ratio is maintained between the size of the tracing stylus and the size of the cutting tool. Thus, in two-dimensional work duplication is limited only by a concave radius on the pattern smaller than the stylus and cutter. Convex radii or outside angles may be duplicated exactly. Square end mills are generally used for two-dimensional cutting, while ball end mills are generally employed in three-dimensional work where either concave or convex surfaces are involved. Correlating the point of contact of the tool with the work and the point of contact of the stylus with the pattern during set-up is simplified by a micrometer adjustment on the tracer's mounting bracket.

The patterns or templates used in tracer production do not conform to any specific standard. Usually, the pattern is made from the material most easily molded, cut, cast, or formed into the desired shape. Wood, plaster, and metal are commonly used.

In two-dimensional work, a thin piece of sheet metal containing the proper contours can be employed. In many cases, the master part is used. Pattern hardness, rigidity, and strength is not important, as the operator uses only from five to seven ounces of pressure in guiding the

... concluded on page 84



**COMPRESSOR ROOM** at heart of AiResearch test facilities. Shown are three of four giant Clark compressors supplying up to 1,397 pounds of air per minute at 125 psig. It's only part of the . . .

## West's biggest private air power system

★ **POWER PACEMAKER** in pioneering an astounding compressed air installation needed to create extreme environmental testing conditions for jet aircraft components with speed and efficiency.

**N**O DESCRIPTION of pacemaker power installations in the West would be complete without an account of the \$7,000,000 production test facility of Garrett Corporation's AiResearch Manufacturing Division in Phoenix, Arizona. For here you'll find one of the largest privately operated sources of compressed air in the world!

Take a look first at the testing operations for which the plant had to be designed and built . . . and then we'll return to a description of the pacemaker compressed air installation that makes these operations possible.

### Why the plant was built

Briefly, the testing plant (housing 90,000 sq. ft. of working area on a 10-acre plot adjacent to the big plant of AiResearch Mfg. Div. of Arizona) was built to a house facilities needed

to qualify, test and develop the pneumatic controls, valves, air turbine starters, motors, refrigeration units and small gas turbine engines designed and manufactured by AiResearch.

That doesn't sound too difficult . . . until you consider some of the environmental testing conditions that must be created! Chiefly, the components and accessory systems tested are those required by today's and tomorrow's jet aircraft, operating at faster-than-sound speeds and at unbelievably high altitudes.

To simulate these conditions required temperature-testing extremes from a bitterly cold minus 75 deg. F. to a blistering 1,000 deg. F.; atmospheric conditions and altitudes up to and beyond 75,000 ft.; engine speeds of 45,000 rpm., and diving or climbing flight conditions from 1,000 ft. below sea level to 75,000 ft. or vice

versa in one minute. And assembled within the plant are more than 75 different production test cells and test stands for proving the components and systems—many of them drawing upon compressed air supply simultaneously at different pressure levels and flow rates.

### What compressed air has to do

A quick tour through the plant will give you a more complete background picture of some of the more stringent compressed air requirements:

Six cabin altitude chambers, 9 ft. in diameter and 15 ft. long and divided in the middle to create cabin conditions on one side while ambient air conditions are maintained in the other half, are utilized to test cabin pressure regulators, pneumatic controls and turbomachinery. To simulate these conditions up to 75,000-ft.

altitude required ambient air flows up to 200 lb. per min. and in addition a low pressure air supply of 525 lb. per min. at 3.5 psi.

Eighteen of the plant's 75 test cells are foot-thick reinforced concrete cells for testing of air turbine starters, air turbine motors, and air turbine refrigeration units. These cells had to be provided with an air source of 300 psi. at temperatures up to 900 deg. F.

A giant size altitude and cold chamber 15 ft. in diameter and 32 ft. long connects to a vacuum system which simulates altitudes from sea level to 75,000 ft. Compressed air supplies are needed here at pressures up to 300 psi. with temperatures from minus 65 deg. F. and air flow rates up to 350 lb. per min.

In a soundproof room, two dynamometers evaluate speed and torque transmission of gas turbine engines, air turbine starters and other equipment. One electric dynamometer test rig is capable of motoring at 150 hp., or absorbing 200 hp. and requires compressed air supply up to 300 psi., temperatures to 900 deg. F., and flow rates to 250 lb. per min.

#### The system that makes it possible

Now let's examine the compressed air system that makes it all possible:

Compressed air is supplied by four compressors at three basic pressure levels. One compressor, driven by a 1,750-hp. motor, operates at pressures to 125 psig. producing 880 lb. of air per min. Two compressors driven by 1,500-hp. motors operate over a pressure range of 125-300 psig., producing 670 lb. of air per min. at 300 psig.

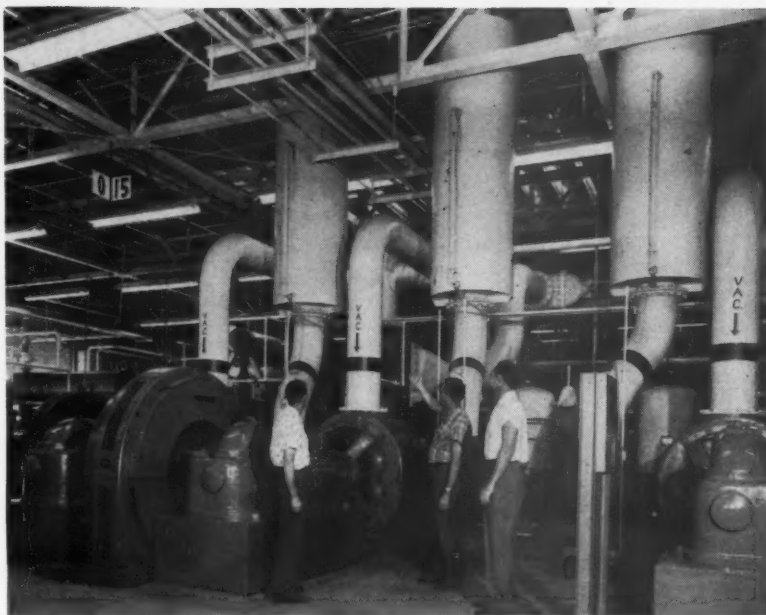
The three compressors operate in parallel at 120 psig. for combined capacity of 1,397 lb. per min. at 125 psig. When compressors are not in parallel, they supply two independent compressed air circuits—a low and high pressure system.

A fourth compressor supplies 15 lb. of air per min. at 1,100 psig. This air is heated to 1,025 deg. F. and employed for high temperature-pressure testing.

The 1,750-hp. compressor, operating independently, supplies low pressure 1,100-deg. air to six cells. A gas-fired hot air heater in this system has a capacity of five million Btu. per hour.

Combined air output of the two 1,500-hp. units is put through an air drying system with a capacity of 1,600 lb. per min., which reduces moisture from the air to 4.6 grains of water per pound.

Two large air receivers serve as



**BIG VACUUM SYSTEM**, built by Ingersoll-Rand, is subject of confab between (l. to r.) AiResearch plant engineer LaMar Nielson, chief operating engineer Ralph Anderson, and Ted Soderberg, assistant to Nielson. Stacks between main vacuum lines lead to barometric condenser mounted on roof of compressor room.

air reservoirs eliminating surge from compressors. For high temperatures, the air passes through two vertical heaters with a combined capacity of 10,800,000 Btu. per hr.

Input air at 40 deg. F. leaves heaters at 400 deg. F. to 925 deg. F. temperatures. Provisions are now being made to connect the third heater in the 125-psig. air system into the 300-psig. system to obtain 1,400 deg. F.



**LAST MINUTE CHECK** before test run is made on an AiResearch gas turbine. Technician will record as many as 38 meter readings from 25 gages and dials on panel when unit is running.

air, with a thermal capacity of ten and one-half million Btu. per hour.

Off the high temperature-pressure line, air is bled and passed through a reducing valve to supply low pressure hot air which can be blended with low pressure cold air in the refrigeration turbine test area.

Air from the high pressure-temperature system can be delivered to the large altitude chamber where air flow is utilized. This chamber is served by an independent vacuum system, duplicating altitudes from 1,000 ft. below sea level to 75,000 ft. above. One high pressure line can be ducted through a refrigeration system. This tank has an air flow temperature range from minus 70 deg. F. to 500 deg. F. Air flow rate is 430 lb. per min.

Also utilizing the high pressure flow are six smaller altitude chambers in which pressure flow between 200-525 lb. per min. at 3.5 psi. is employed.

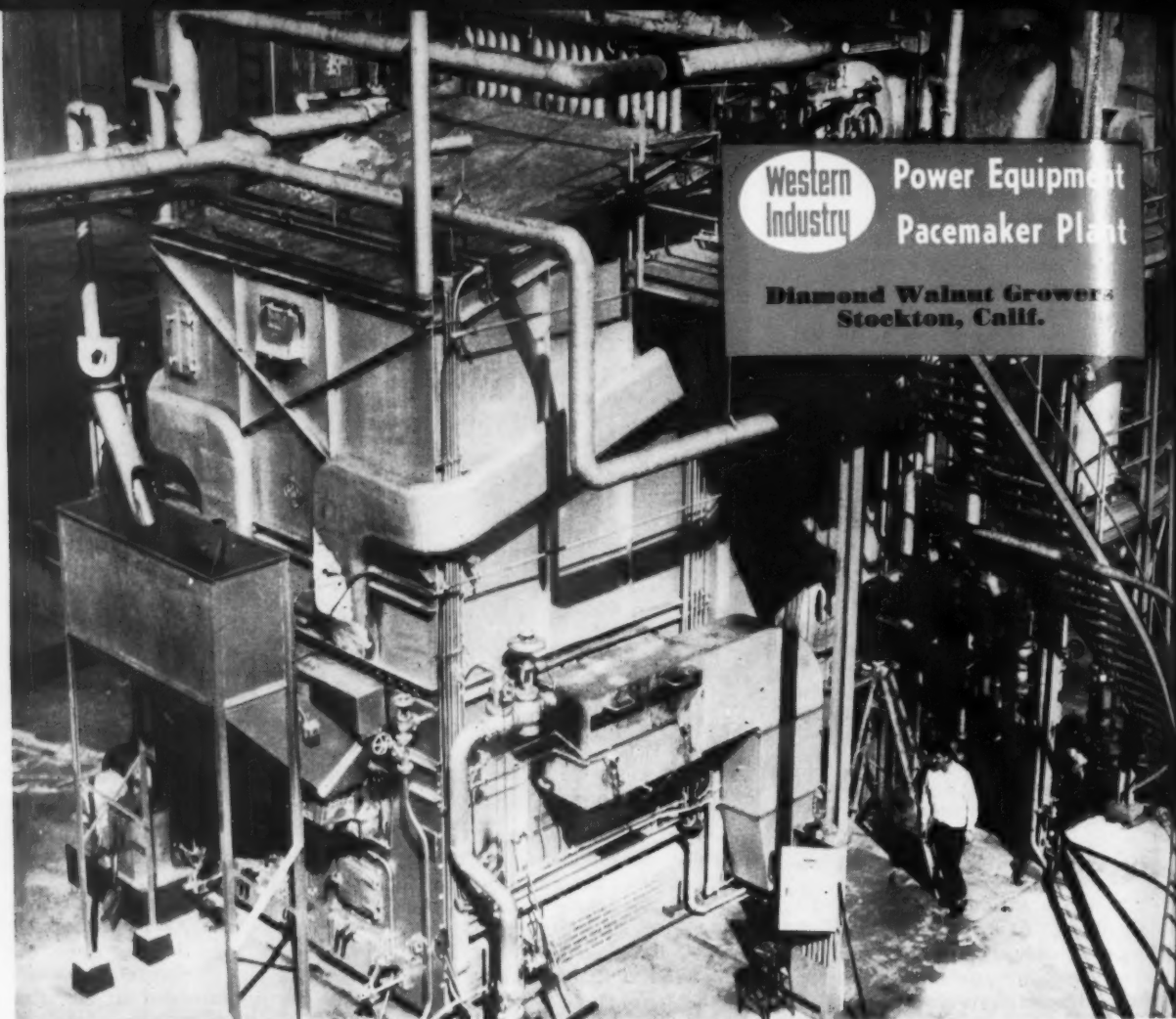
Two dynamometers for torque testing also utilize high pressure air to operate test units. These dynamometers produce 400-hp. absorption capacity and 300-hp. motoring capacity at 6,000 rpm.

In the valve test area, fourteen lines with pressures up to 300 psi. and temperatures to 900 deg. F. are provided.

Another high pressure air system

... concluded on page 74





**WALNUT POWERED PLANT?** Yes, the power plant above uses walnut shells for fuel. It shows you how to . . .

## Turn your by-product into power

★ **POWER PACEMAKER** plant took advantage of the fact that its by-product burned. Here's the story of how special equipment was designed to handle the "walnut shell power."

**I**F THE BY-PRODUCT of your plant burns, you may be in for luck.

That's the experience of Diamond Walnut Growers' processing plant in Stockton, Calif. The plant, whose by-product is walnut shells, has turned this "waste material" into a good source of fuel to power various units in the plant. But it wasn't easy.

Here is the story of how the plant became "walnut shell powered," told by Dan Vandament, of the consulting engineering firm of Vandament & Darmsted, San Francisco, who did much of the engineering on the project:

"Relative to the burning of walnut shells, we checked several boiler manufacturers in this area and found records of one plant in Alameda which had burned walnut shells to a limited extent a few years ago.

"Then we found that shells are now being burned in the Northwest. And, we studied other similar materials such as coffee grounds, coffee hulls, coconut shells, hog fuel, sawdust, paper pulp by-products, almond shells, etc.

"One of the first proposals for burning walnut shells came from the Bros Boiler Co., which guaranteed the operation of the boiler using this fuel.

The use of gas as a stand-by was recommended for igniting the fuel and also to maintain operation should some trouble in fuel feed be experienced.

"The calorific value of the shells is approximately 7,850 Btu. per pound, moisture content is 8% or less, ash content is less than 1/2 of 1% and the fuel seems to be ideal for use with over-feed type stoker.

"We checked the complete yearly production chart for production of walnut shells and plotted this against weather data to determine estimated frequency rates for heating and cooling.



"We found that it would take about 1,580 tons of shells per year for heating purposes and that it would take about 60 to 100 tons for cooling or air conditioning. We then investigated the possibility of steam drive for refrigeration equipment since we could reasonably expect about 15,000,000 lb. of walnut shell production per year.

"We charted expected fuel use against expected fuel production and balanced this against estimated fuel storage requirements and found that this was quite reasonable—estimated that total yearly savings would be in excess of \$7,000, considering initial costs and amortization figures, to produce the power needed for steam turbines.

"We then looked into a cost analysis for full power generation for the entire plant. Our calculations indicated that there was a question as to whether sufficient fuel for shells would be available; the balance was very close. The expenditure of capital would be quite high and the net savings would be only about \$1,000 per year. Since there are so many variables in such a departure from common practice, we did not feel that this should be recommended for the present.

#### Final design for walnut burning

"Our final design was based on burning the shells to provide heat for the building, power for pumping, heat to the Armstrong process, concentration of the brine, generation of hot water, driving of steam turbines in various locations, and doing the work for air conditioning and refrigeration.

"In designing this plant for the use of steam in turbine drives, we ran into several problems. One was unbalance of the water return to the boilers and the steam output. The cost of a condenser for the use with steam turbine drives would be about \$15,000 to \$25,000. This would cause us to have either a large feed warmer problem or a high cost of condensing. We then followed up the idea of using a steam jet refrigeration unit to more fully utilize the steam power produced. Rather late in the design stages the principle of absorption refrigeration was studied. Mr. Ludwig of York Corporation, Mr. Ridley of the Diamond Walnut Growers, and I took a trip to Houston, Tex., to check the operation and maintenance of some plants in that area.

"This trip proved to be very fruitful. The absorption units are particularly adaptable to our problems. Maintenance and operation are considerably less than with a more conventional type plant. Basic requirements

for selection of this type of system seem to be that the initial load must be rather high from 300 to 500 tons or more and cheap fuel is desirable.

"We settled on a design using an ammonia absorption unit for the present capacity of approximately 675 tons and capable of being expanded to 1,000 tons at a minimum of rearrangement and cost. Use of this system would save approximately \$40,000 and we could handle both the refrigeration load and the air conditioning load from a single unit using calcium chloride brine for refrigeration and a sweet-water cooler for the air conditioning.

#### Air conditioning-refrigeration

"In this fashion the entire unit could be used for air conditioning loads, if necessary, or for refrigeration loads, providing considerably more flexibility than any other conceivable system. By varying the back pressure on the turbines, we also can use the ammonia absorption unit to completely condense all of the steam produced from the various steam turbines. This permits us to attain the fullest efficiency from the use of the steam. The load on the absorption unit can be varied from 100% rating to zero almost instantaneously, and this process can reverse itself with a whole unit balancing itself for the changing load conditions.

"This plant was designed with the boiler and ammonia absorption unit both located in the plant yard exposed to the weather with no building required to house them. A central control office was located between the units with recording gages and registering temperature, pressure, combustion, etc., all on one compact panel.

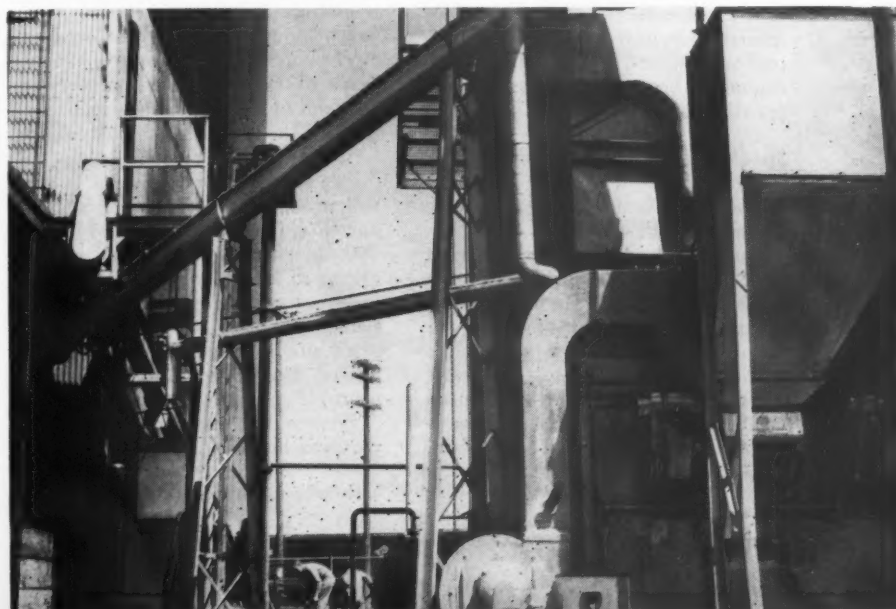
"We installed a cooling tower capa-

ble of handling a refrigeration load of 1,000 tons, using the glass plate method of cooling the refrigerated areas. This method is essentially a series of ribbed glass plates over which calcium chloride brine flows. Air is passed between these plates and comes in direct contact with the brine. By varying the temperatures of the brine, we are able to regulate the air temperatures in the refrigerated boxes.

"By regulating the concentration of the brine, we are able to regulate the humidity in the boxes. This control is quite accurate. In the various walnut storage areas we are handling a total of about 400,000 to 500,000 cu. ft. of air per minute. This air is distributed to the boxes by means of round duct work. In the bottom of the ducts are perforated openings which discharge the air at a relatively high velocity toward the stored walnuts. The flow of air throughout the storage areas is quite uniform. We used the static regain principle to establish a relatively uniform static pressure across the orifice openings.

"Considerable credit must be given to some of the manufacturers who assisted in assembling the data necessary, particularly, *William Bros Boiler Company*, the *York Refrigeration Company*, *American Blower Company*, *Joy Fan Company*, *Worthington Company* who supplied the steam turbines, *Marley Company* who supplied the cooling tower, *Trane Company* who supplied the air conditioning units, *Anemostat Corporation* who supplied the air diffusing units, *Minneapolis-Honeywell Company* who supplied the control systems, *Natural Gas Equipment Company* who supplied the combustion controls. Of course, there were many others too numerous to mention."

**SHELLS ARE DUMPED AUTOMATICALLY** onto a conveyor belt which carries them to a hopper. The men below are shoveling up spillage of shells.



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Western  
Industry

## Power Equipment Pacemaker Plant

Permanente Cement Co.  
Lucerne Valley, Calif.

IN THE DESERT 34 mi. from nearest power company substation, new Permanente plant began operation this May.

# Safe, efficient power for a desert plant

★ **POWER PACEMAKER** provides electrical system that's tops in safety and efficiency despite problems from dust, corrosion in grounding to dry soil, and possibility of impaired performance at high altitude.

**P**UT A BIG processing plant at high altitude in a dry and remote desert location, and you've got yourself some power problems! Spelling trouble for the plant's electrical system could be line losses in transmission to the site, impaired performance of transformers at high altitude, reduced efficiency of insulation from accumulations of ever-present dust, and corrosion troubles in grounding because of soil dryness and porosity, to name a few.

### Special power system needed

These were some of the power headaches facing Permanente Cement Co. in building its just-completed cement plant in the Cushenbury area of Lucerne Valley, Calif. The outstanding electrical system that was provided for the plant, and the manner in which the special problems were met, makes it one of the West's 1957 Power Equipment Pacemaker Plants. Here's background information about the plant,

and a complete picture of its pace-maker electrical system:

Consumption of portland cement in the United States reached approximately 55,000,000 tons in 1955, and production of aggregates such as gravel, limestone and sand approximated 250,000,000 tons in the same year. Use of these materials continues at even higher levels, and to meet anticipated needs Kaiser Engineers of Oakland, Calif., designed and constructed the new plant at Cushenbury for Permanente Cement Co.

The new plant and adjacent quarry will produce an estimated 2,500,000 barrels of portland cement and 1,000,000 tons of metallurgical and cement grades of limestone yearly. Metallurgical grade stone after crushing and sizing will be shipped by rail from the plant site in Lucerne Valley to the Kaiser Steel Corporation's plant in nearby Fontana.

Remote desert location of the plant required building a new 34-mi. long

115-kv., 3-phase, 60-cycle power line by the California Electric Power Co. from their substation at Victorville. The 115-kv. transmission voltage was selected to handle the load satisfactorily and stay within the limits of reasonable line losses to obtain satisfactory voltage regulation.

### Protection against dust

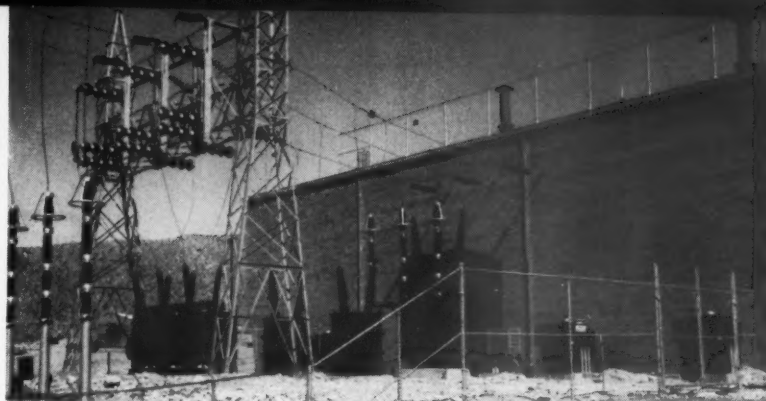
Power is brought to the Cushenbury substation by three 336,400 cm. ASCR cables supported by steel towers. The substation contains a 115-kv., 3-pole breaker with associated high voltage disconnect switches, lightning arresters, metering outfit and one 3-phase delta star connected 10,000/12,500-kva., 115/4.16-kv. oil immersed transformer with provision for forced air cooling. Low voltage side of the transformer is connected by enclosed bus to indoor metal-clad switchgear.

Metal-clad bus was selected to provide protection against dust and me-

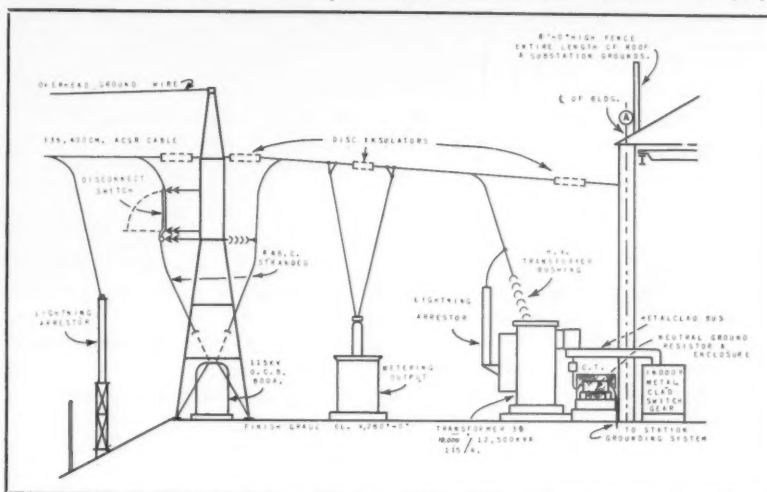
Provision was made in the substation area for future expansion should growth of the plant load make this necessary.

The 4,280-ft. elevation of the substation required special consideration. Transformers were provided with extra length high voltage bushings and other features to assure performance at this altitude. A higher level of insulation was also required due to the continuous accumulation of dust, which must be removed periodically.

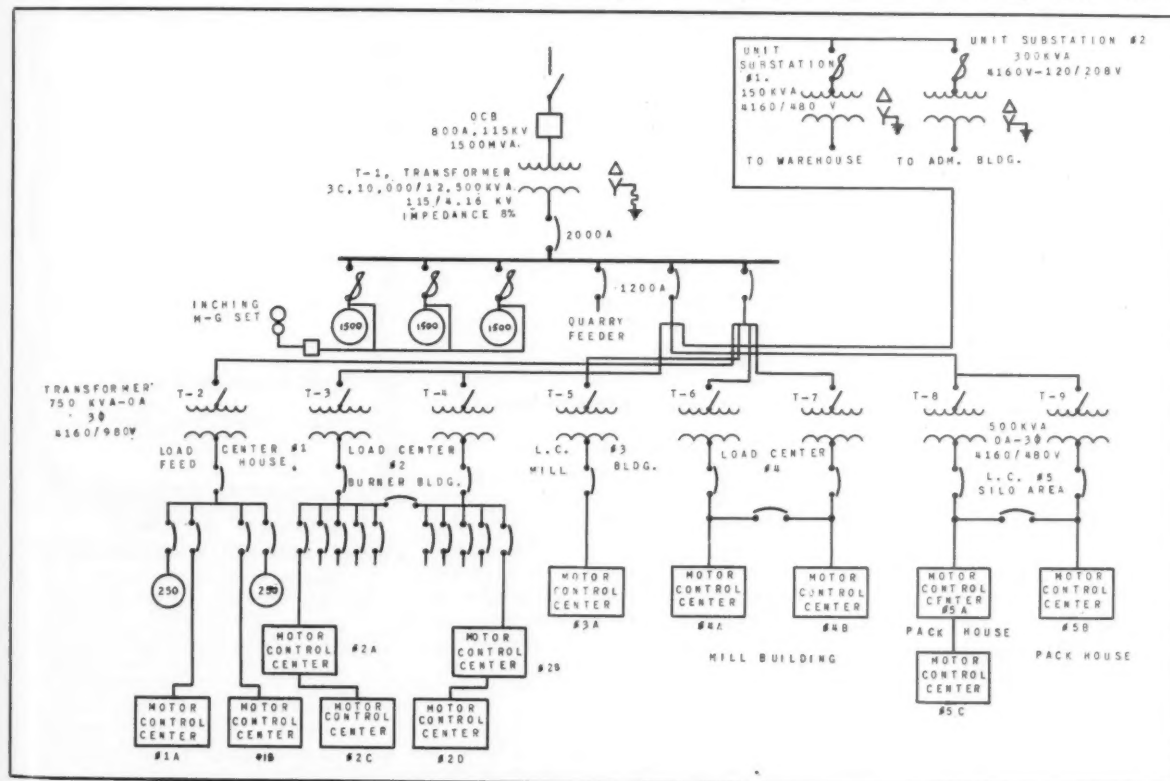
Distribution network of the plant is shown by single line diagram on this page. Anticipated load is about 10,000 hp. The distribution system starts with 4.16-kv. indoor switchgear.



**PLANT'S SUBSTATION** is designed against dust and mechanical injury.

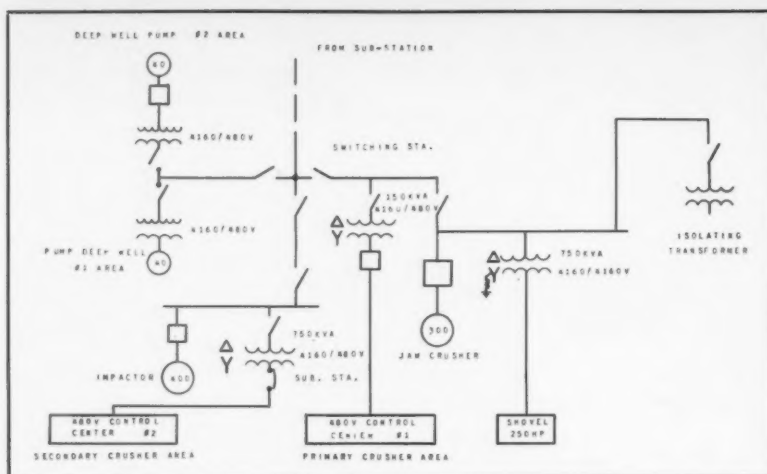


**Figure 1—Arrangement of equipment in the Cushenbury substation.**



**Figure 2—Single line diagram of the plant's electrical distribution network.**





**Figure 3—Distribution system of the quarry area, to serve double purpose of powering crushers and a big 250-hp. electric shovel.**

are directly connected to the main switchgear bus. Five load centers with step down 4160/480-volt transformers supply power to various locations at the mill through 480-volt motor control centers. In addition there are two unit substations, located at the warehouse and administration building. A separate feeder takes power to the quarry.

Principal electrically-driven equipment are the two kilns with 250-hp. drives, three tube mills with 1,500-hp. 720-rpm. synchronous motors, two electrostatic precipitators, and 12 cement silos. Miscellaneous associated equipment and facilities are in the storage and administration buildings.

#### Adjustable voltage for kilns

The two 450-ft. long revolving kilns are among the largest pieces of moving equipment in use. Ward Leonard adjustable voltage equipment used for kiln drive provides flexible speed control. The package unit consists of a 250-hp. a-c. motor and a 170-kw. d-c. generator. A control panel contains all necessary instrumentation. A start-stop pushbutton station and rheostat control is located near the kiln operator who can observe the burning process and make required changes in kiln speed.

Inching requirements were met through installation of a 30-kw. M-G set which supplies direct current to six contactors. Proper timing sequence of the opening and closing of the contactors provides an approximate three-phase alternating current.

Through use of d-c. bus, one inch is used for inching of all three motors. The resultant ultra-low frequency

power when applied to the a-c. motor causes it to deliver suitable low speed rotational torque at the motor shaft.

#### Underground feeder to quarry area

An underground feeder with three 350-mcm. cables brings power to the quarry from the main distribution switchgear. It is terminated in the switching station, where power is distributed by overhead pole lines to the crusher area and a movable 250-hp. shovel.

The underground distribution system consists of steel and korduct conduits encased in concrete, and corrugated steel pipes 8 ft. in diameter. Types RH-RW-TW insulated wires were used in the underground system throughout the mill area. Cables in tunnels and corrugated pipes are laid in cable trays. Water and slurry pipes run in the same corrugated pipes with electric conduits and cables. A typical cross section of corrugated pipe is shown in the drawing on page 57.

#### Electric shovel powered too

The distribution system of the quarry area is shown in diagram on this page. It consists of two 4160/480-volt unit substations, with associated load centers in crusher areas, and feeders to deep water pumps, impactor and jaw crusher. A 250-hp. shovel is connected to the system through a 750-kva. 4160/4160-volt impedance grounded, delta star, isolating transformer.

Alternating current drive motors on modern electric shovels are designed for operation on high voltage, thereby

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### AMERICAN STEEL WAREHOUSE CO.

425 N. E. Ninth Avenue, Portland 14, Oregon  
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### AMERICAN STEEL & SUPPLY CO.

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### EAGLE METALS COMPANY

4755 First Ave. South, Seattle 4, Wash.  
Phone: LAnder 9974

Helena at Broadway, Spokane 24, Wash.  
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Salt Lake City 4, Utah  
Phone: DAvis 2-3461

909 No. 1st St., Phoenix, Arizona  
Phone: ALPine 4-0369

1533 India Street, San Diego, Calif.  
Phone: FRanklin 9-5826

### TAY-HOLBROOK, INC.

603 Brown St., Box 3038  
Bakersfield, Calif.  
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940 Broadway, Eureka, Calif.  
Phone: HI 2-4516

920 "M" Street, Box 1866  
Fresno 18, Calif.  
Phone: 6-8231

1801—22nd St., Sacramento 4, Calif.  
Phone: HI 6-3841

P. O. Box 969, Salinas, Calif.  
Phone: 2-4771

605 Old County Rd., San Carlos, Calif.  
Phone LY 3-7631

165—8th Street, San Francisco 1, Calif.  
Phone: MA 1-6800

695 Stockton Avenue, San Jose, Calif.  
Phone: CY 2-3606

1800 Merced St., San Leandro, Calif.  
Phone: NEptune 6-1110

251 Roberts Avenue, Santa Rosa, Calif.  
Phone: S.R. 6400

1234 So. Aurora St., Stockton 8, Calif.  
Phone HOward 6-9531

### UNION HARDWARE & METAL CO.

5555 E. Ferguson Avenue  
P. O. Box 3070, Terminal Annex  
Los Angeles 54, Calif.  
Phone: RAymond 2-2411

## REVERE

### COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

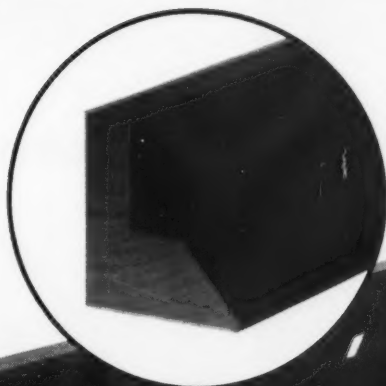
230 Park Avenue, New York 17, N. Y.

Mills: Rome, N. Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Brooklyn, N. Y.; Newport, Ark.; Ft. Calhoun, Neb. Sales Offices in Principal Cities, Distributors Everywhere.

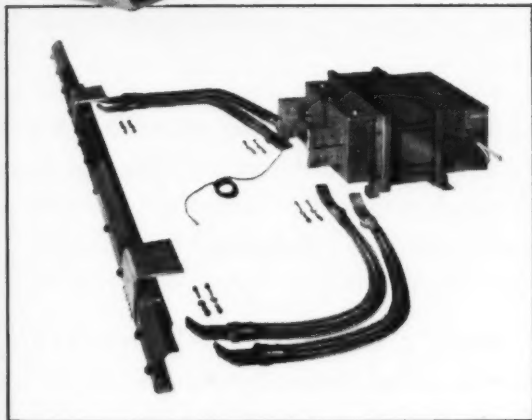
LOS ANGELES: 6500 East Slauson Ave. Raymond 3-3331; SAN FRANCISCO: 116 New Montgomery St. Sutter 1-0282; SEATTLE: 314 Fairview-North. Main 1401



REVERE COPPER EXTRUSION shown attached to skirtboard before full assembly, which you can see below in exploded view. A matching bar, similar to the one shown is part of the "packaged" HANCO unit and is fastened to the opposite side of the screen. Units, in turn, are installed on the various types of Vibrating Screens made by HEWITT-ROBINS INC., Passaic, N. J., and are known as the HEWITT-ROBINS HANNON Electric Screen Heaters.



CLOSE-UP showing end of the Revere Copper Extrusion.



## Revere Copper Extruded Shape

in Hanco Electric Screen Heater

**out-performs**  
former copper casting  
**on 4 counts**

### Here's the Score!

#### COPPER EXTRUDED SHAPE

- 1—12 foot mill lengths offer flexibility, eliminating both welds and scrap
- 2—Shape offers lack of porosity
- 3—Shape straightness is superior to casting, giving better electrical contact
- 4—Higher cost per foot, but cheaper over-all installation

#### COPPER CASTING

- 1—60" casting required additional welded joints
- 2—Casting gave porosity problem
- 3—Bow in casting presented difficulty when fastening screen firmly to contact
- 4—Initial cost was lower, but additional welds and scrap resulted in higher final cost, and an inferior finished product

"Customers of F. R. Hannon & Sons are now assured of many years of maintenance-free performance plus improved products."

Says T. W. HANNON, Vice-President,  
General Manager  
F. R. HANNON & SONS, Canton, Ohio

Mr. Hannon continued, "For a number of years we had experimented with many different types of materials which would be non-porous, free from any burrs or voids, capable of maintaining a straight leading edge and able to carry 1500 amperes at 5 volts. The Revere Copper Extrusion meets these requirements. And for the rugged use to which our machines are put it would be virtually impossible to maintain satisfactory operating results without the use of this extruded electrical conductor."

Perhaps there is a Revere Product that can help you give your customers a superior product, or help cut your production costs. You'll never know until you call the Revere Office nearest you and ask to have a T. A. (Technical Advisor) call. Why not make that call today?

REVERE COPPER AND BRASS  
INCORPORATED  
Founded by Paul Revere in 1801  
230 Park Avenue, New York 17, N. Y.

LOS ANGELES:  
6500 E. Slauson Ave. Raymond 3-3331

SAN FRANCISCO:  
116 New Montgomery St. Sutter 1-0282

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No "SHIP-IN-A-BOTTLE" construction

on a

*Lufkin*

## TWO-PIECE GEAR HOUSING

**Provides easy accessibility  
for assembly and inspection**

- Allows main gear to be assembled on shaft with heavy 60 ton pressed fit. All rotating parts easily set in place before cover is bolted on. No "threading" of shafts and bearings as necessitated by solid gear box with no split.
- Made of High Tensile Lufkaloy-Iron heavily ribbed inside, giving smooth exterior, pleasing in appearance and easy to keep clean.
- Large Heat Treated Alloy Steel Studs capable of carrying ten times rated load without stretching.
- Large Clean Out Hole for removing sludge from bottom of box.



Plenty of "BEEF" throughout  
which is typical  
LUFKIN DESIGN POLICY

### LUFKIN FOUNDRY & MACHINE COMPANY

LUFKIN, TEXAS

Branch sales and service Houston, Dallas, New York, Tulsa, Los Angeles, Seminole, Oklahoma City, Corpus Christi, Odessa, Kilgore, Wichita Falls, Casper, Wyoming, Great Bend, Kansas.

PACIFIC COAST DIVISION—5959 South Alameda, Los Angeles 1, California

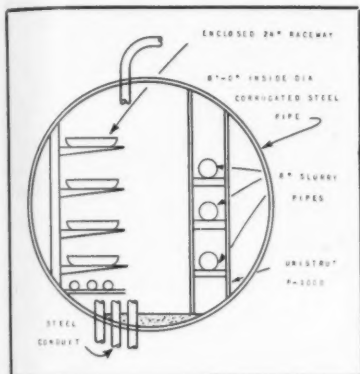
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See Directory listing page 125

WESTERN INDUSTRY — September 1957

permitting wider range with smaller portable cables. Because of mobility of the shovel, the high voltage cables are exposed to injury and possible short circuits.

Impedance grounding of the neutral of the 4160/4160-volt, delta star, isolating transformer has certain advantages in the event of cable failure.



**Figure 4—Electric cables in underground system are run in corrugated pipes along with water and slurry pipes.**

By limiting the value of line to ground fault current, fire and explosion hazards are reduced, high temperature areas are localized and electric shock hazards to workmen are minimized.

#### Grounding system problems

An interesting feature is the grounding system adopted in the plant. Field tests indicated resistivity in the neighborhood of 187,000 ohms per cubic centimeter. The annual precipitation in the area is small and disappears rapidly in the porous soil of the desert.

Corrosion troubles were experienced with copper ground systems in the area and it was decided to use a steel ground mat. Based on experi-

ence, the use of steel rather than copper will reduce materially the amount of corrosion that may take place.

Grounding in the substation area was accomplished by burial of a half-inch stranded steel cable in the ground 24 in. below grade along fence enclosure. Bare copper wires of various sizes were enclosed in transite duct 24 in. below grade for interconnection between various pieces of grounded equipment and ground wells.

Grounding wells were drilled to the depth of permanent water level about 250 ft. below ground surface. Static overhead No. 4/0 B.C. cable connects deep water wells No. 1 and No. 2 with equipment in the quarry. This overhead cable is strung on top of the existing pole line bringing power to the same location.

#### Protective devices throughout

Protection of the plant electrical system is provided by transformer differential relays, phase overcurrent relays and ground inverse time overcurrent relays arranged to give selective isolation of short circuits in the conventional manner.

Protection of the ball mill synchronous motors presents a somewhat unique problem since the mill will slow down quickly upon interruption of the utility power supply. Due to the characteristics of the ball mill, rapid restoration of utility service might damage the equipment and is necessary to prevent the motors from being re-energized before the mill is ready for restarting. Customary undervoltage protection applied to the induction motors is ineffective because of regeneration of the synchronous motors. However, fast-acting underfrequency relays provide effective means of protection against this contingency.

The usual undervoltage protective devices are applied to large induction motors in the plant.

### PRICELESS PLANT POWER PRODUCT FACTS

... are yours in the 1957 Western Industrial Power Equipment Buyers' Directory, on pages 109-140 of this issue.

It's the only directory published that lists 400 U. S. manufacturers of plant power equipment—electrical, hydraulic, mechanical power transmission, etc., along with the addresses and phone numbers you need to contact branch sales offices, distributors, or representatives nearest you in the 11 Western states.

Keep it handy the year around—it will save you time and money in locating Western sources of sales and engineering help quickly.

GEARS FOR INDUSTRY  
**THE Lufkin LINE**  
OIL FIELD PUMPING UNITS

### AT SEA ABOARD THE S. S. MATSONIA

(Somewhere between Catalina and the Sandwich Islands—via carrier seagull)

**Old Captain Cook, the English explorer, really started something when in 1778 he ran onto a group of islands in the middle of the Pacific Ocean, which he promptly named for his backer, The Earl of Sandwich.**



V. J. Fawcett

I have not run any research on the Earl, but he no doubt reached his royal status by inventing the sandwich. This may sound hammy, but time is limited and here it is the 2nd paragraph without any mention of Lufkin Marine Gears, Lufkin Gears for Sugar Cane Squeezers, or Lufkin High Speed Gears for pumping pineapple juice—These are among the sweetest jobs to which a Lufkin Gear can be put.

Hawaii, the original name of the islands, is the traditional home of the Polynesians, or Hawaiiki. Early missionaries who came to the islands in 1820 spelled it "Owyhee."

This vessel, a sister ship to the S.S. Lurline, is a thing of beauty. Everyone is having fun, playing shuffleboard, enjoying the pool, or perhaps playing pinochle on the poop deck.

Gotta go now, the Captain's giving a ball tonite and there are some capers to be cut. It's 8 bells and all's well.

Aloha—

*V. J. Fawcett*

P.S.—Of particular interest to Petroleum people, everything aboard ship is well oiled.

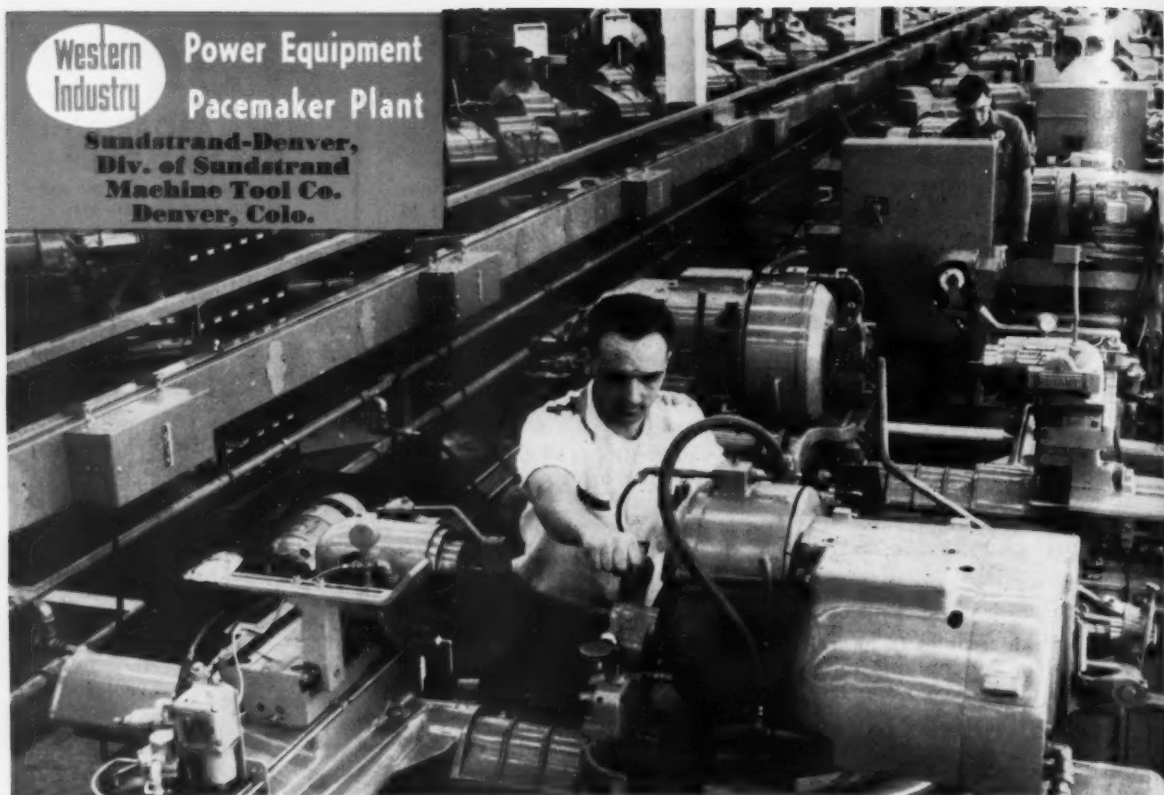
**Lufkin FOUNDRY & MACHINE COMPANY**

... for more details, circle No. 37  
See Directory listing page 125

Western  
Industry

## Power Equipment Pacemaker Plant

Sundstrand-Denver,  
Div. of Sundstrand  
Machine Tool Co.  
Denver, Colo.



FOUR FEET OFF THE FLOOR and every 32 ft. across the width of the plant are bus runs like this, to prove that . . .

# Waist-high bus duct can be tops!

★ **POWER PACEMAKER** installation of a bus duct system that saves overhead space, cuts installation costs, and eliminates safety hazards.

**A** BUS DUCT four feet off the floor! Sound impossible? . . . confusing? . . . hard to believe? Well, it's a reality—at Sundstrand-Denver, a division of Sundstrand Machine Tool Co., in Denver, Colo.

Every 32 ft., across the width of the plant, there is a run of bus duct. The duct is supported on columns, spaced 24 ft. apart with additional mounting racks in between. These same supports carry other facilities (air, gas and water) required in the machine area. Machines are fed off the duct, with flexible cable running from a plug-in unit to the starter box.

Why this unusual arrangement?

Sundstrand officials point to these advantages:

1. It eliminates clutter and saves overhead space. In most plants, bus duct is located overhead, with drop lines running from plug-in unit to machine. Not only is this unsightly, says

Sundstrand plant engineers, but it uses valuable space that can be used for balcony additions for offices and for storage space (a point to remember if you plan balcony offices in your plant).

2. It cuts installation costs by one-third. Think of it. Short runs of cable are all that are required . . . hook-ups can be done much faster.

3. It eliminates falls from ladders. Everyone holds his breath when some guy climbs up on a ladder to service an overhead bus duct (especially the guy up there). Bet there has been many an accident from unscheduled "dives" off those ladders.

How about the disadvantages?

There are two main ones. But these have been solved pretty well:

1. Supervisors have to walk to the end of the bus duct to get from one part of their department to another. However, the layout is such that al-

most each aisle is a separate department . . . when that's not the case, a little walking is still good exercise.

2. Bus duct could heat up if employees followed the big temptation to place small tools, personal items and belongings on the duct. This has been eliminated by having a locker for each employee and a bench with drawers for tools. And the rule of no belongings on the bus duct is strictly enforced.

How about the hazards of bumping the duct with handling equipment? This has been licked because no truck can get near the duct . . . and there's a minimum of 10 ft. between runs at all aisles.

In cases where the operator must walk between the duct and his machine, the machine is connected by running solid conduit from the plug-in switch straight down into the wood-block floor. From there it runs through



**In the Middle Ages  
square fastening holes  
were gouged from wood by the**

**TWIBIL\***

*Now precision  
holes are tapped  
in modern metals,  
including titanium, by this*

**GARRETT "FAMOUS BRAND"\*\***

**\*\*BUTTERFIELD TAPS** (100% inspected), manufactured to precision tolerances, thread aluminum, brass, steel, stainless steel, chrome alloy steels and titanium faster. Special surface treatments improve tap efficiency and extend their life.

..... \*THE TWIBIL was in use in Britain as early as 1400. Introduced into New England in the 17th century, it hacked out the square mortise hole that received the tenon which fastened one piece of wood to another.



Garrett stocks the most complete line of Butterfield Taps and Dies in the West. These quality tools are typical of the fine industrial products with which we supply industry. In our inventories are more than 100 famous brands, and our service is as outstanding as our stock. So whatever you need, "Get it from Garrett!"

**HEADQUARTERS IN SOUTHERN CALIFORNIA AND ARIZONA FOR THESE AND OTHER FAMOUS BRANDS**

Dexion Slotted Angle  
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Black & Decker Electric Tools  
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**GARRETT**  
**SUPPLY COMPANY**

3844 South Santa Fe Ave., Los Angeles 58, California


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a division of **THE GARRETT CORPORATION**



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*from tea strainers...*



*to catalytic crackers...*

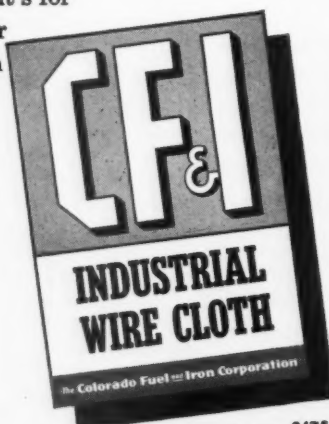
*you will find*



## INDUSTRIAL WIRE CLOTH

It's a versatile product, this CF&I Industrial Wire Cloth. For it plays an essential part in the tiny tea strainer and in the oil refinery's huge catalytic cracker. Chances are that you're using it—or could be using it—to good advantage right in your own operations.

CF&I Industrial Wire Cloth will meet your most exacting specifications—whether it's for screening, filtering, grading, cleaning or processing. That's because CF&I Cloth comes in a wide variety of weaves and meshes and can be supplied in non-ferrous metals, as well as carbon and alloy steels. Why not get the complete details from your nearby CF&I representative today!



3675

**THE COLORADO FUEL AND IRON CORPORATION:** Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Wichita • **WICKWIRE SPENCER STEEL DIVISION:** Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

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the floor and up at the machine disconnect.

The bus duct is fed underground from switchgear equipment. At aisles (where runs are discontinued for 10 ft.) bus is jumpered by underfloor cable between tap boxes mounted on columns on either side of the aisle.

Another interesting point: the substation is located within 50 ft. of 50% of the total connected load in the plant, and both high and low voltage electrical service systems are looped.

## General Mills cuts M-H costs with dock boards

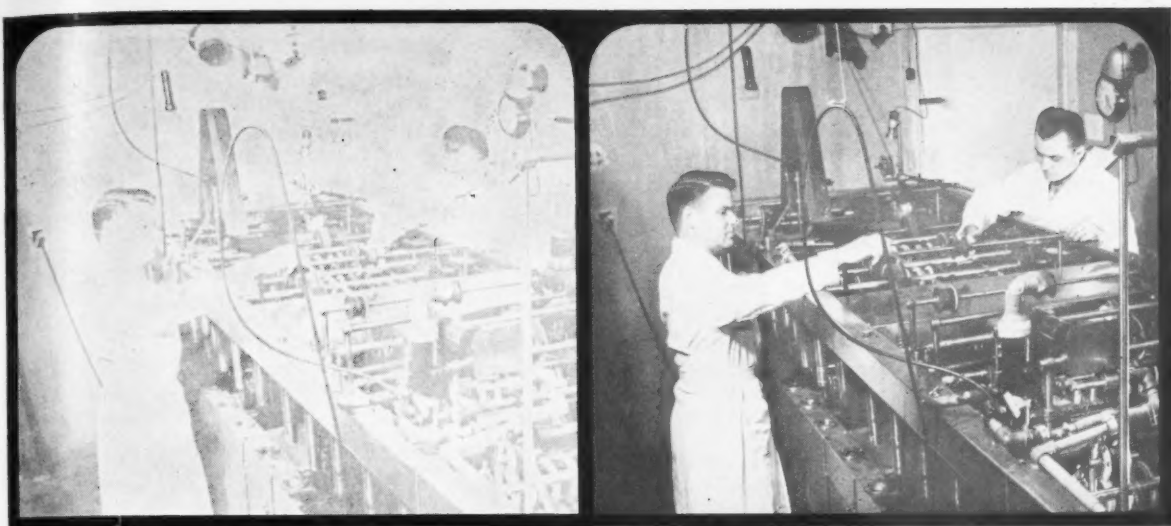
GENERAL MILLS, INC., cut one of its material handling costs by one-third when it installed 32 Magline magnesium Perma-Docks at its Stockton and Lodi, Calif., facilities.

Perma-Docks are unique in that one end of the dock board is hinged to the dock, thus making it easy, quick, safe and efficient to raise or lower—while handling only one-half the weight of the board.

There is no storage problem, no waste floor space, no dangerous open pit. Rail loading and unloading has been speeded up, as more boxcars are handled in less time.

The new dockboards replaced heavy, steel plates used formerly to bridge spans between boxcars and warehouse dock. The Magline boards eliminate the need for control systems or counterweights. There is no maintenance or upkeep.





## 3-D lubrication

The story behind Sawyer's Inc. of Portland, Oregon, is a

pretty fabulous one. This famous organization is the world's largest manufacturer of 3 dimensional pictures, viewers, and other photographic equipment.

As such, they've had to design much of their own ingenious equipment.

This naturally led to some specific lubrication problems. From the very beginning, GP lube engineers have helped solve the many complicated operating and maintenance problems arising from lubrication requirements. The next time you have a lubrication problem, make a note to call in your local General Petroleum representative. You'll be very glad you did.

**GENERAL PETROLEUM CORPORATION**

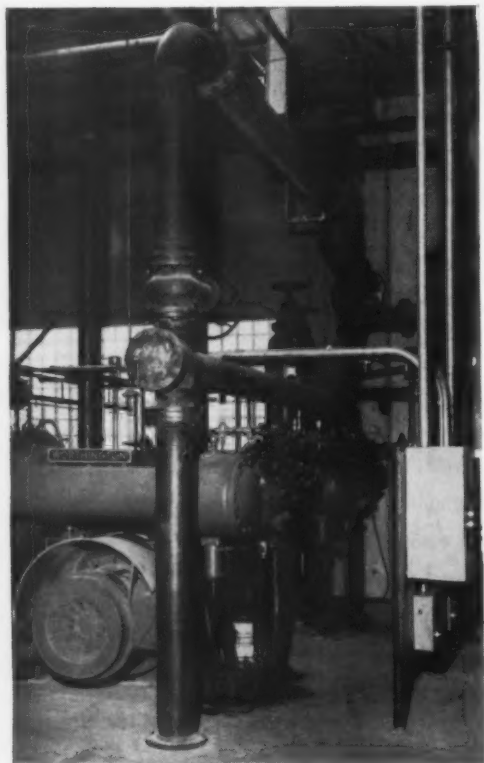


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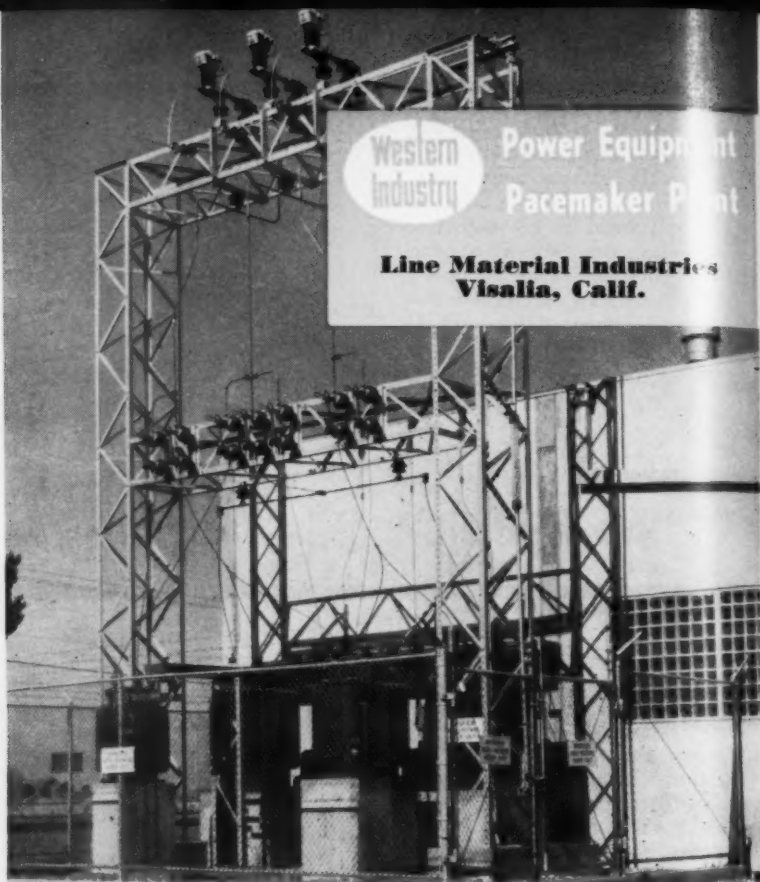
... for more details, circle No. 40 on Reader Service Postcard



**HYDRAULIC-POWERED** coil winding machine.



**WORTHINGTON** air compressor installation.



**SUBSTATION** using Line Material components throughout.

## Diversified power system

★ **POWER PACEMAKER** set-up includes electricity, gas, compressed air, and oil-hydraulic power.

**D**IVERSIFICATION was the main power requirement when Line Material Industries broke ground for its transformer manufacturing plant in Visalia, California, last November.

And the 65,000-sq. ft plant—in operation since May of this year—now boasts a power system that includes electricity, natural gas, compressed air and oil-hydraulic power. These force power production equipment used in coil winding, transformer fabrication, transformer tank fabrication and quality control.

### Electric power source

Since the company's products span the field of electrical distribution, the substation which supplies power to the new plant is composed almost entirely of Line Material components.

A 12,000-volt line from Southern

California Edison Company supplies power through a 15-kv. air-break switch with load interrupter through Type HXO power fuses to five Line Material Round-Wound distribution transformers.

These are arranged in a 500-kva. 3-phase bank for power at 460 volts, a 167-kva. single-phase transformer for lighting and convenience outlets, and a 50-kva. transformer to supply current to the electrical test area at 240 volts.

The need for the latter arose because of the undesirability of voltage fluctuations in test work which might be caused when large equipment in the plant is started up. The prefabricated substation structure on which the L-M switching, fuses, and insulators are mounted is also a product of Line Material Industries.

From the substation, power is distributed to the plant through breaker-



which of these  
**JEFFREY**  
 coal crushers  
 will meet your  
 needs?

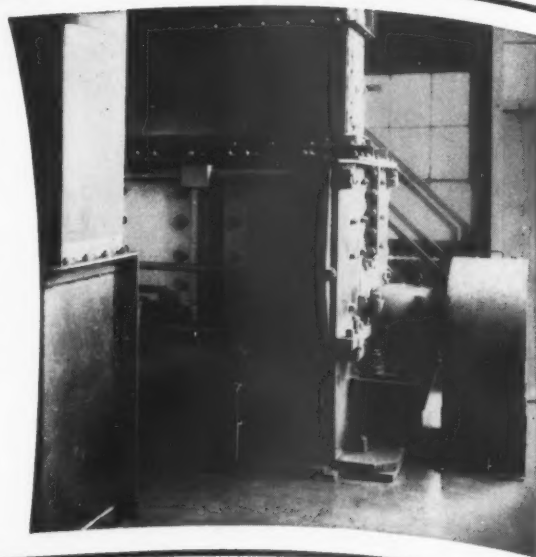
**S**INGLE AND DOUBLE roll crushers, FLEXTOOTH® and FLEXROLL® crushers, swing hammer pulverizers—Jeffrey makes all the popular types used in power plants, large or small.

Care in selecting the proper type of crusher means the difference between an efficient installation and one that bottlenecks coal moving through the plant.

Our engineers will gladly give you complete satisfaction on your problem, using their years of experience with every conceivable crushing case.

Jeffrey also offers the most complete test history file of any manufacturer of crushing equipment, plus a fully equipped laboratory where tests on coal in doubtful cases will be run at no expense or obligation to you.

For more information, write for Catalog 784-C. The Jeffrey Manufacturing Company, Columbus 16, Ohio.



Top: 42" x 66" FLEXTOOTH for coal reduction to minus 1" or 3/4".

Center: 42" x 82" Type B Reversible Swing Hammer for crushing coal down to minus 1/8".

Bottom: 20" x 12" Type A-2 Swing Hammer Pulverizer for medium and small capacity plants, also in sampling operations. Reduction down to minus 1/2" to 10 mesh.



**JEFFREY**

CONVEYING • PROCESSING • MINING EQUIPMENT  
 TRANSMISSION MACHINERY • CONTRACT MANUFACTURING

Burlingame, California . . . . . 1862 Rollins Road . . . . . Telephone Oxford 7-5303

... for more details, circle No. 41 on Reader Service Postcard  
 See Directory listing page 123

63

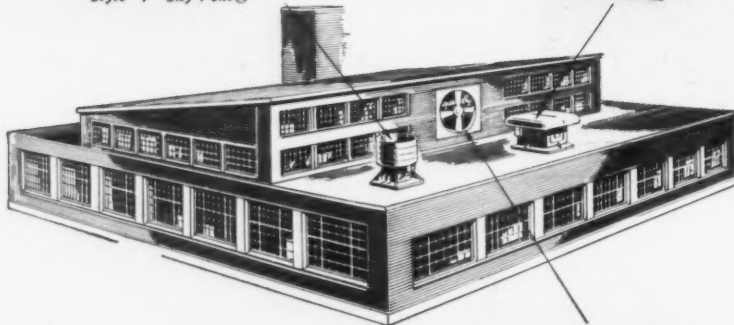
WESTERN INDUSTRY — September 1957



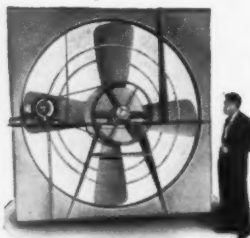
Style "V" Sky-Vent®



Style "H" Sky-Vent®



**VENTILATE AND/OR  
HEAT YOUR PLANT  
QUICKLY, EFFICIENTLY,  
AT LOW COST  
SUMMER OR WINTER**



**"BUFFALO" POWER ROOF VENTILATION**—No plant is modern and efficient without adequate ventilation, and it need not be a major expense. "Buffalo" Sky-Vent Roof Ventilators have proved to be one of the most reasonable and completely satisfactory solutions. They're delivered to you as ready-to-run units; thus, you save on installation cost. They handle large plant areas without need for duct systems, a further saving. They're efficient, husky and weatherproof. In combination with heater sections mounted under roof openings — or with heating coils and various damper arrangements built integrally into Style "H" stack — they can readily be used for winter supply of heated make-up air. Write for Bulletin FM-2345 and check these "Buffalo" ventilation values with the "Q" Factor\*!

**"BUFFALO" PACKAGE PROPELLER FANS**—Modest in first cost, and the most inexpensive fans to install, "Buffalo" Package Propeller Fans provide all the desirable features for heavy-duty industrial and commercial ventilation. In 24" to 120" sizes, they deliver fresh, live air to any area from a small room to a whole plant or a giant auditorium. Very efficient at slow speeds, they are unusually quiet — and built for a lifetime of low-cost, beneficial ventilation. Ask your Engineer or Contractor about "Buffalo" Fans, Heating and Ventilating Units or Central Air Conditioning Cabinets!

\*The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.



**BUFFALO FORGE COMPANY**

155 MORTIMER STREET BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

Sales Representatives in all Principal Cities

INDUSTRIAL EXHAUSTERS

BELTED VENT SETS

PROPELLER FANS

"E" BLOWERS-EXHAUSTERS

... for more details, circle No. 42 on Reader Service Postcard

type switch cabinets, and plug-in type bus ducts which run through the entire plant. These ducts are of 1,000, 800, and 600 amp. capacity. Individual plug-in switches are used to connect machinery to the duct by means of conduit, in accordance with California Electrical Safety Orders.

Since equipment ranges from fractional horsepower loads to loads of 100 hp. each, and welding machines each drawing 250 kva., a variety of sizes is required.

**Lighting**

Lighting in the plant consists of mercury vapor lamp fixtures, which give a light intensity of 40 to 55 foot-candles in the manufacturing area. The office is lighted by fluorescent fixtures recessed into the suspended ceiling over the 5,000-sq. ft. office area, which give a light intensity in excess of 75 foot-candles.

An outdoor lighting installation, comprised of Line Material street lighting equipment, has been placed in operation. This installation, employing mercury vapor lamps of high lumen output installed in Ovalite luminaires, provides excellent lighting to the paved outdoor parking, trucking, and road area, as well as to the lawn area surrounding the plant.

In addition to being practical for illumination purposes, the installation enhances plant security, and also it blends aesthetically with the plant design. As a manufacturer of lighting equipment, Line Material has been well aware of the trend toward quality plant lighting for utilization, security, and decorative illumination.

**Compressed air**

Compressed air is supplied to the plant by two Worthington YC-2 vertical-angle double-acting, two-cylinder, two-stage water-cooled air compressors. Each compressor is driven by a 100-hp. electric motor, 440 volts, 60-cycle 3-phase, 585 rpm., flange mounted to the compressor. Capacity is 569 cfm. free air per machine, and the discharge pressure is 100 psig.

The reason for the large compressor capacity is that many air operated tools and machines are in use, as well as a W. W. Sly Company shot-blast room, which alone requires the output of one of the compressors, when in use.

This compressor installation was planned for future expansion, and the piping manifolds, aftercooler, and receiver tank are all designed and sized for the addition of a third machine in

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## Installed 25 years ago...still in excellent condition... here's another Wrought Iron Plate durability story

After twenty-five years of service over boilers, these wrought iron stacks still rate a "no maintenance needed" inspection report.

These stacks, installed at San Rafael, California, Gas Plant of Pacific Gas & Electric Company, tell the kind of story repeated over and over again whenever wrought iron is used. It's a story of economy made possible because of wrought iron's unique defense against flue gas corrosion.

Byers wrought iron plate is an old campaigner in stack service. You'll find documented evidence

of its endurance in our bulletin, *Wrought Iron for Flue Gas Conductors and Coal Handling Equipment*. Clear up a lot of questions about stack maintenance. Write us today for this helpful aid... it will pay you.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Division Offices in Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. International Division: New York, N.Y.

*Available in Canada and throughout the world*

### **BYERS Wrought Iron Tubular and Hot Rolled Products**

ALSO ELECTRIC FURNACE QUALITY STEEL PRODUCTS

... for more details, circle No. 43 on Reader Service Postcard



# Even More Amazing in 1957!

This ad first appeared in 1954. Despite rising steel and labor costs — FURNACE BRAZING costs on this part have gone down more than 200% in 3 years. Let a **FABRIFORM** engineer

show YOU how to save with **BRAZING!**



## ... the TWINS with the AMAZING PRICE TAGS!

MORE PROOF THAT  
COPPER FURNACE BRAZING  
CAN CUT FABRICATING COSTS!

Identical TWIN parts... same appearance... same strength... BUT ONE COSTS 80% LESS

Actual Size

NOW \$1.63

~~\$1.24~~

**MACHINING**

Materials: Solid Bar Stock

Labor: MACHINING 70% Metal Waste plus high labor

LATHE MACHINING Extra labor cost plus expensive equipment

DRILLING and REAMING More labor cost

BLANK AND DEBURR NOW \$1,630.

**TOTAL COST \$1,240.00** ... for 1,000 pieces

NOW 6 1/2c

~~13 1/2c~~

**COPPER FURNACE BRAZING**

Materials: Tubing Stamping

Labor: Cut-Off Low labor cost

DEBURRING by low cost Machine Tumbling

ASSEMBLY by Press Fit Method

COPPER

NOW \$65.

**TOTAL COST \$185.00** ... for 1,000 pieces

phone LUdlow 7-7131

**FABRIFORM**  
METAL PRODUCTS



7720 MAIE AVE.  
LOS ANGELES, CALIF.  
Div. of George Gutz Corporation

... for more details, circle No. 44 on Reader Service Postcard

the future. The compressors are of the five-step self unloading type, in order to keep power consumption at an economical level.

Compressed air is distributed to the plant through a 4-in. main, and to the shot-blast room through a direct 3-in. line. Compressed air is used on air-powered hand tools and swaging guns, brazing torches, cable stripping machines, assembly fixtures, flow coat and spray painting booths, leak testing machines, welding fixtures, pneumatic presses, blow-off pipes on a metal treating machine, as well as the shot-blast room already mentioned.

### Hydraulic machinery

Hydraulic machinery is used extensively in this operation. In order to form the Obround transformer tank for Line Material Round-Wound transformers, a considerable number of special machines is required.

These include machines for forming the tank sections from sheet steel, flanging the upper and lower rims of the tank, and trimming excess metal following the flanging operations. In the Coil Winding department, twelve identical hydraulically powered coil winding machines, designed and constructed by L-M engineers and technicians are used to produce Round-Wound coils.

These machines are powered by Denison Engineering Company hydraulic pump units, valves, and fluid motors, each pump being driven by a 3-hp. electric motor. The use of hydraulic drives on winding machines has reduced many of the problems inherent in mechanically driven winding machines in the past, resulting in better product quality, reduced operator fatigue, and lowering of costs.

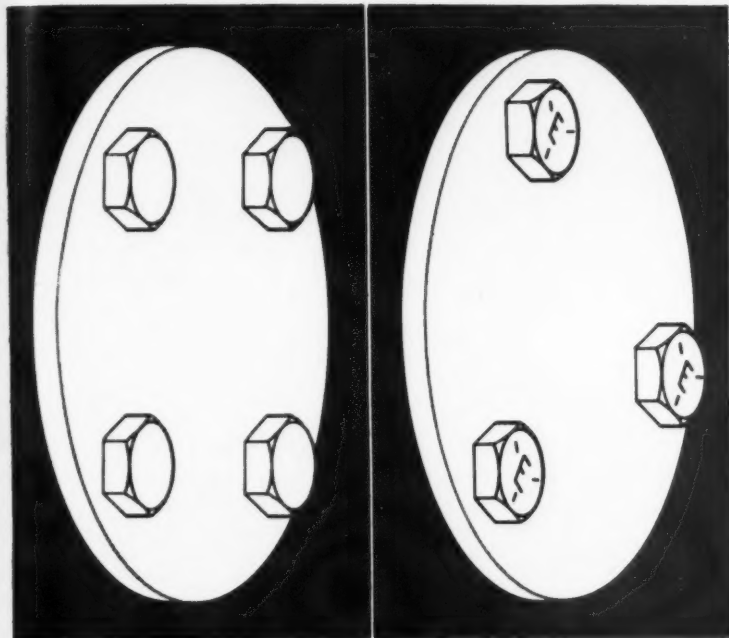
Other hydraulic equipment in the plant includes fork lift trucks, a hydraulically operated Rotary Leva dock, which adjusts to the height of various trucks at the shipping and receiving dock, hand-operated lift trucks, swaging guns, and a portable hydraulic crane.

Since the plant has been in operation only since May, no accurate cost comparisons are available between some of the new equipment and older equipment used in other plants within the company.

It is felt, however, that the equipment installed in this plant will permit future growth and expansion with a minimum of replacement since most of the equipment was sized and planned with considerable future growth in mind.



## ECONOMIC FACTS ON FASTENERS



# SIMPLE CHANGE SAVES UP TO 40% ON FASTENER COSTS

• High strength bolts deliver more "holding power" per dollar

• Savings in production can also be realized

Figure the cost of fasteners as if you're buying *clamping force* to hold together an assembly. This way, \$1.65 worth of "holding power" in machine bolts costs you only \$1.50 if bright cap screws are used . . . but only \$1.00 in high carbon bolts.

Viewed another way, it means that the stronger fastener can be smaller for a given application, and so costs less. Or it can mean using fewer fasteners.

Either way, you save. On direct fastener costs; on manufacturing. With *smaller* fasteners, there are smaller holes to drill (or maybe you can even go to punching). With *fewer* fasteners, there are fewer holes to fill. (In the sketch above, fastener assembly time would be cut one-fourth.)

• **Case History:** Where an application is suited to high strength bolts the savings can be substantial. One Midwest farm equipment plant that standardized on them saved \$12,000 the first year, \$28,000 the second.

Manufacturers willing to review their requirements with an RB&W Fastener Man may find it rewarding. He's a technical specialist who can help you save money in assembling your products with standard fasteners. Russell, Burdsall & Ward Bolt and Nut Co., P.O. Box 3336—Terminal Annex, Los Angeles 54, Calif.



**Plants at:** Los Angeles, Calif.; Rock Falls, Ill.; Coraopolis, Pa.; Port Chester, N. Y. **Additional sales offices at:** San Francisco; Dallas; Chicago; Detroit; Pittsburgh; Ardmore (Phila.), Pa. **Sales agents at:** Denver; Fargo; New Orleans; Milwaukee. **Distributors** from coast to coast.

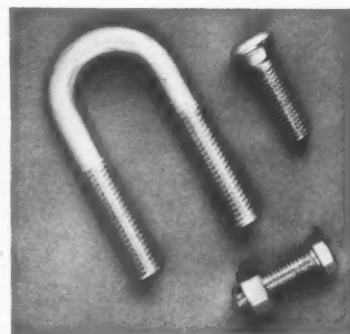


Spin-Lock "tooth" about to bite in. Head meets seat when fully tightened.

## Spin-Lock Screws solve assembly problem

The designer specified countersunk-head screws to be used in a particular casting. The production man had to stake these in to anchor them. But this meant extra operation, made screw removal damaging and difficult.

The answer was found in Spin-Lock screws. These have hardened "ratchet-action" teeth that bite in when tightened, take 20% more torque to loosen than to tighten, can be reused. Send for Bulletin.



## Silicon bronze fasteners combine desirable features

Silicon bronze offers the highest conductivity in fasteners able to withstand high stresses. It resists corrosion, stays free from season cracking, too. It makes ideal fasteners for electrical use where tensile strength is important; or for corrosive environments.

One of the first to develop such fasteners, RB&W cold works them for tensile strength and for clean, well formed threads that don't seize. Oval bolts, hex bolts and nuts, and U bolts available. Specials can be developed.

**RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY**

... for more details, circle No. 45 on Reader Service Postcard

WESTERN INDUSTRY — September 1957

...for straight right-angle  
cuts every time...the new

# RIGID

## Wide-Roll Pipe Cutter



**fast true  
pipe cuts on  
your power drive**

Rolls are twice the usual width, double the bearing surface on pipe—sure straight start of cut . . . by hand or power drive—extra fast and easy. Pays you to see it before you buy your next cutter—at your Supply House.

No. 201, 1/4" to 1 1/4"

No. 202, 1/4" to 2"



The Ridge Tool Company, Elyria, Ohio, U.S.A.

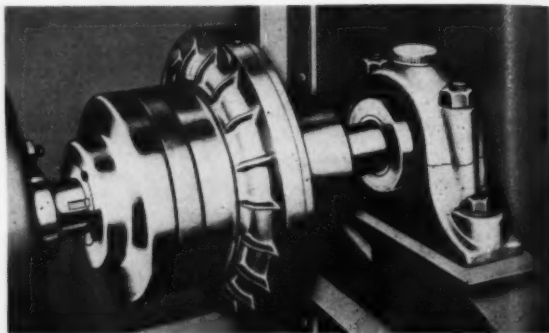


... for more details, circle No. 46 on Reader Service Postcard

**PACEMAKER POWER EQUIPMENT**  
— today's best products —

### DRY FLUID DRIVE

... for motors up to 75 hp. at 1,750 rpm.



Now manufactured in a larger size, with horsepower ratings 50% over the previous maximum, is a new line of Flexidyne drives and couplings. Designated as the 15D and 15C, the units are similar to smaller Flexidynes in sizes 7D and 7C to 11D and 11C (number indicates outer diameter of the housing in inches.) The new models feature smooth starting, 100% efficiency at full load and protection against overload. *Dodge Manufacturing Co.*

... for more details, circle No. 338 on postcard

### SHAFT-MOUNTED SPEED REDUCER

... easily mounted, compact, lightweight



Flexibility of mounting arrangement, increased safety and lower maintenance costs are features of this speed reducer for applications where complex multiple reduction belt or chain drives have been required. Ratio changes can be made in minutes by

changing pulleys, and a wide variety of pulley sizes makes the unit adaptable to a broad range of speeds. Available in most ratings from 1/4 to 40 hp., at output speeds from 10 to 420 rpm., it comes in single and double reduction ratings, in ratios of 5 and 15-to-one. *General Electric Co.*

... for more details, circle No. 339 on postcard

### PUMP-AND-DRIVING-MOTOR UNITS

... close-coupled, save space, weigh less



For the occasional user of pump-motor units, the firm interested in single or minimum quantity orders, the Tuthill company offers a new series of positive displacement units to be used in varying combinations for hydraulic, oil-

burning, lubricating and other services involving many different fluids. Close-coupled, these units have the pump mounted on the motor, eliminate need for coupling, adapter or base. In comparison with a regular assembly, the unit saves at least six in. in space and weighs several pounds less. *Tuthill Pump Co.*

... for more details, circle No. 340 on postcard

(continued on page 150)

Don't you get the feeling this is a modern, efficient organization?  
Luminous ceilings would do the same for your company.



## What a beautiful way to increase office efficiency

It's a matter of record that a bright and pleasant seeing-environment boosts production. Whether in office or factory — when you do away with gloom and glare, you reduce errors and accidents.

The even light of this luminous ceiling is easy on hard-working eyes... produces a handsome "open sky" appearance. The proud owners of this ceiling-of-light — Lenkurt Electric Co., San Carlos, Calif.— say it has effectively reduced eye fatigue and improved working conditions. The working environment is vastly better, too... roof members, overhead wiring and plumbing are now out of sight.

**Northern California Electrical Bureau**

*This advertisement sponsored by*

**Pacific Gas and Electric Company**

Certified Lighting is like any other production tool. Used properly, it will increase the quality and quantity of work. For detailed information on how you can benefit from "Certified Lighting," send for the free book offered below.

Northern California Electrical Bureau  
1355 Market St., San Francisco 3, California  
Without cost or obligation, please send me the  
"Fact Book on Certified Lighting for Offices."

Name \_\_\_\_\_ Company \_\_\_\_\_

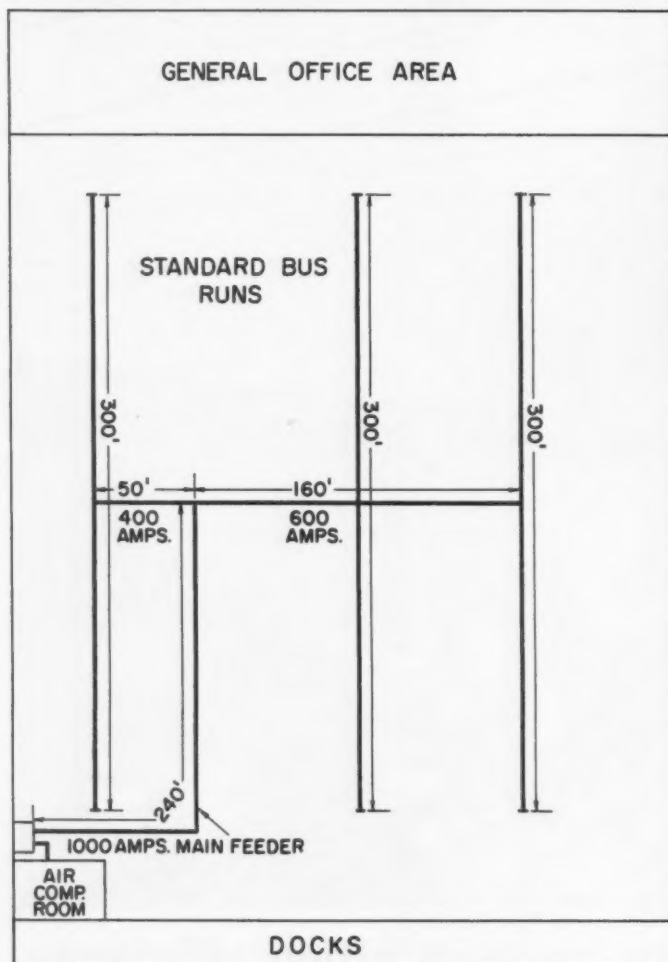
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City \_\_\_\_\_ State \_\_\_\_\_

... for more details, circle No. 47 on Reader Service Postcard

**WESTERN INDUSTRY — September 1957**

# Flexible and expandable bus duct power



FLOOR PLAN shows bus duct runs.

★ **POWER PACEMAKER**  
bus duct system that is ideal for  
plants of moderate size.



“FLEXIBILITY and expansion are the two outstanding features of our new power system. It is simple and efficient . . . ideal for plants of our size (100,000 sq. ft.) using many different kinds of small machinery.”

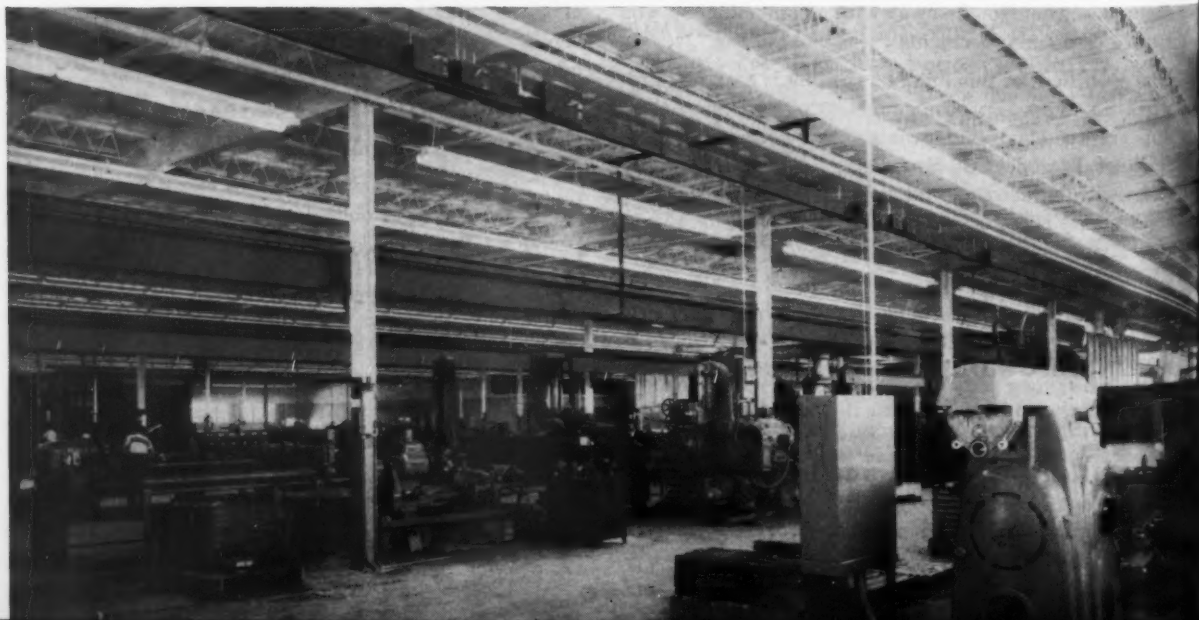
This is how John T. McCarley, plant manager at Yale & Towne's new material handling manufacturing facility at San Leandro, Calif., views the power set-up at his plant.

McCarley explains it this way: “We have 1,400 ft. of bus duct running overhead. Every 12 in. there is a plug-in station. To get power, all a maintenance man has to do is plug in a power take-off device, run wire through steel tubing, and connect to the magnetic control on a machine.”

Ah, and here is the beauty of the setup: Total electrical installation for any machine can be completed in less than an hour . . . machines are always only a few feet from a source of power . . . and there is enough reserve for about three times expansion of the present system!

Here's how it works: Power from the Pacific Gas & Electric Co. is brought in at 12,000 volts into a bank of three transformers rated at 750

**NOTE THE BUS DUCT** running overhead with drops down to machinery. Set-up is simple and efficient.





# FLASH-TITE® Gummed Tape Tips



## STORE TAPE PROPERLY



Don't let this happen to *your* tape!  
Store where it won't get damp—in  
original moisture-resistant wrapper.  
Keep away from excessive heat.

Storing tape where temperature and humidity are moderate is important for trouble-free taping. *For best results under all conditions use Flash-Tite gummed tape.*

The Flash-Tite glue formula is specially blended for quick grab, lasting stickiness. The Crown Zellerbach Accuray—control by atomic energy—*guarantees* a full measure of glue, a consistently uniform coating.

**IMPORTANT!** New Free Booklet  
"Flash-Tite Gummed Tape Tips," tells  
you how to get the most out of packaging  
with gummed tape. Send for it NOW!



FLASH-TITE, DEPT. 2-1  
343 SANSOME STREET  
SAN FRANCISCO, CALIFORNIA

Please send me your free booklet,  
"Flash-Tite Gummed Tape Tips"

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TYPE OF INDUSTRY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

REQUESTED BY \_\_\_\_\_



**CROWN ZELLERBACH**

... for more details, circle No. 48 on Reader Service Postcard

kva. at 440 volts (a picture of this installation shows how room has been left for increasing size of transformers. The transformers are housed in an expandable area outside the plant).

#### Feeding power into plant

Transformers feed power into a main control panel (480 volts, three-phase, three-wire, 1,000 amps.—expandable to 1,600 amps.). Then the bus duct shoots up from this panel,

rising to the ceiling and going out into the plant.

At the center, it divides into 400 and 600 amp. bus runs. The 400 amp. run feeds lighting transformers and panels that provide control for part of the 720 fixtures throughout the plant. Westinghouse industrial lighting fixtures are used in the storage and assembly areas (see diagram). Illumination is extremely good in this plant, provided by lighting fixtures, engineered to match the white ceiling

which acts as a reflector, and natural light from skylights.

The 600-amp. bus run feeds heavy machinery located in one section of the plant (see diagram). This equipment consists of a battery of milling machines, shears, brakes and other machinery, using motors of 3 to 50 hp., and 16 welders drawing from 5 to 90 amps. Welding units draw tremendous amperage, but the overload capacity of the system and a diversity factor handle this problem.

## **SPEEDAIRE** Farval Spray Panel

### **WORM GEAR DRIVE** for economical lubrication of open gearing

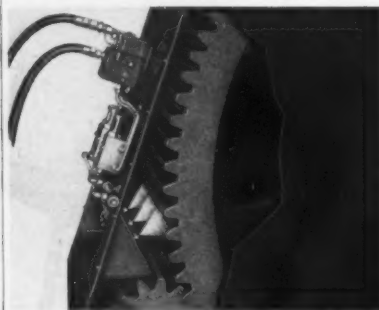
Saves Space, Saves Weight, Saves Money



• This fan-cooled worm gear drive delivers up to double the horsepower of standard worm units of equal frame size. It saves weight, space, money.

Speedaire design moves air at high velocities to increase rate of heat dissipation. This and other modifications give Cleveland's Speedaire worm gear speed reducer a much greater load-carrying capacity. As a result, a Speedaire is capable of doing the job of a much larger conventional unit. Catalog 400 gives detailed design information and typical applications. Write for free copy today.

**CLEVELAND WORM GEAR**  
*Speed Reducers*



• This Farval Spray Valve Panel is designed to spray-lubricate bull gears, girth gears and other spur or herringbone gear trains.

A self-contained panel, mounted on gear housing or framework, sprays lubricant directly to the pressure side of gear teeth. On the panel measuring about 2' x 3', are stainless steel spray valves with built-in nozzles. A central pumping unit delivers lubricant through Dualine measuring valves, to the spray valves which mix it with air to form a penetrating spray.

For description of Farval spray panels, ask for Bulletin 26-R.

**FARVAL CENTRALIZED**  
*Lubrication Systems*

—two of the SUPERIOR PRODUCTS supplied by—

**F. SOMERS PETERSON CO.**  
*For Superior Products*

representing in addition to the above—

- "American" Flexible Metal Hose
- "American" and "Amerigear" Flexible Couplings\*
- "Cleveland" Worm Gear Speed Reducers\*
- "Farval" Centralized Lubrication Systems\*
- "Hassall" Special Cold-Headed Products
- "Hapman" Tubular Conveyors\*
- "Kupfrian" Push-Pull Controls
- "Kahn" Test Stands and Dry Air Equipment
- "Taller & Cooper" Data Reduction Equipment
- "Lowell" Heavy-Duty Reversible Ratchet Wrenches
- "Veeder-Root" Counting Devices

SAN FRANCISCO — 157-13th St. — Phone Market 1-2255  
LOS ANGELES — 1501 Maple Ave. — Phone Richmond 9-6151

\*Northern California Only

... for more details, circle No. 49  
See Directory listing page 114

... for more details, circle No. 50

#### Getting power to machines

How does power get from the bus duct to the machinery? Dick Sorensen, chief maintenance engineer, tells how:

"We use Westinghouse circuit breaker plug-in devices as power take-offs. These units snap into place connecting to the bare bus bars of the duct. Wires are then attached to the terminals of the plug-in unit, pulled through the steel tubing with fish tape, and connected to the starter box of the machine.

"No wires are exposed. The steel tubing bends easily and is stable enough so it isn't flopping around. This makes for a nice, clean job with no 'haywiring.'

"Because there are plug-in points every 12 in. on the bus duct, we can locate machinery and have it hooked up within an hour. We save about half the time and material required of other installations. Machines are about 30 ft. from the power source, so there is not much voltage drop from plug-in unit to machine.

"Then once installed, there are no maintenance problems. The system just runs itself."

#### Outstanding safety features

This type of installation has two outstanding safety features: (1) There is a circuit-breaker device on every plug-in unit, and motor control devices on each machine. (2), the circuit breaker on the plug-in unit will provide fool-proof system disconnect by pulling the handle with a hook stick. This allows the maintenance men to work in absolute safety.

The system is also highly efficient. Because it is up in the ceiling and exposed, it is not subject to overheating, on overloads of short duration. Good power factor (about 90%) is maintained by two synchronous motors running air compressors. The motors are PHE Ingersoll-Rands, with starting torques of 83 amps. Motors

*whatever you need*

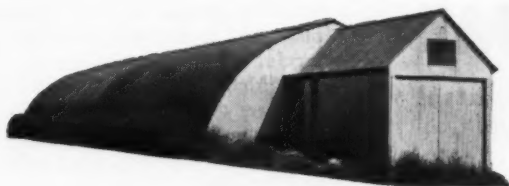
# build it better...faster...for less...with steel



*Service Station by Fentron Industries*



*Plant Office by Calcor Corporation*



*Potato Cellar by Boise Payette Lumber Co.*



*Warehouse by owner*

*Steel is the one material that gives you  
ALL these important building advantages*

**GREATER STABILITY** and longer life can be expected when you build with steel, the versatile metal.

**LOW COST:** Steel construction is precise, simple and fast. You get more usable space per dollar.

**PROTECTION:** Steel is your best protection against fire, wind, snow loads and stress from cranes. Steel is permanent!

**VERSATILITY:** Steel buildings are being used for every purpose. If you need a new building fast; one that will last . . . specify steel.

*For offices, plants, stores, schools, farms, warehousing . . .*

## Give your buildings the advantage of steel

United States Steel Corporation • Columbia-Geneva Steel Division • 120 Montgomery Street, San Francisco 6

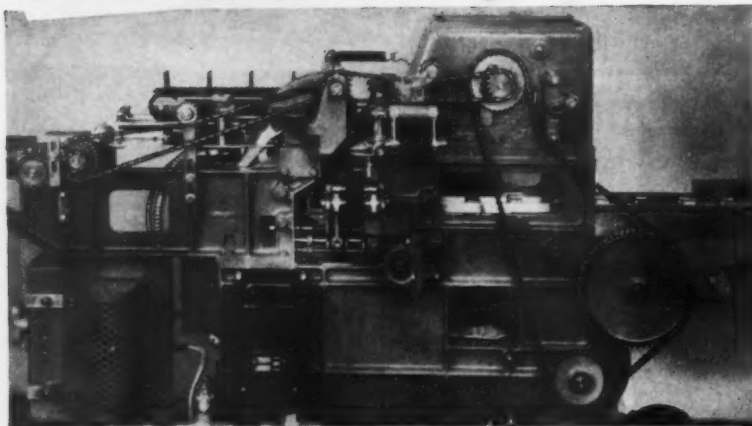
### UNITED STATES STEEL



... for more details, circle No. 51 on Reader Service Postcard



*Another*

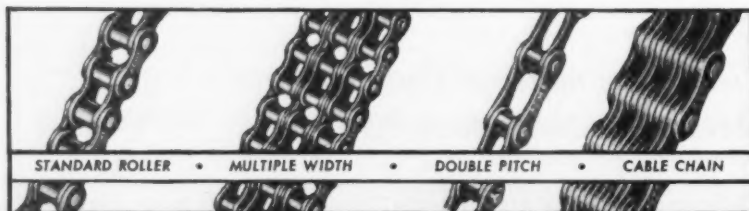


## SOLUTION *by* ACME

Another instance where ACME ENGINEERS went to the drawing board for a customer. ACME delivers more than chain. ACME delivers complete advisory service . . . especially engineering-wise.

Surely your operation can benefit by our 35 years of roller chain experience. Call at will . . . at the slightest hint of power transmission lag or any other chain problem.

Write or phone Jefferson 2-9458.



**RUGGED PRECISION CHAIN for EVERY NEED**



Write Dept. 2-E for new illustrated 76 page catalog on use and application of roller chains and sprockets.



... for more details, circle No. 52 on Reader Service Postcard  
See Directory listing page 109

power two 100 lb. compressors drawing 300 to 500 cu. ft. of air a minute. This air is used for various operations (spray painting, cleaning, etc.) throughout the plant.

### Planning behind the system

Behind the system was a lot of planning. When Yale & Towne decided to build its material handling manufacturing facility, it made a two-dimensional template layout for each machine. Then it took the horsepower requirement for each motor and amperage of each welding unit, and calculated the power requirements.

Of course, plenty of "juice" was left for future expansion. The plant can expand to about three times its present capacity . . . the power system can match that and more . . . all with the present system!

Installation of the power system was by Del Mar Electric Co. of Berkeley. The duct system was installed quickly and efficiently just after the roof was in place.

Electrical apparatus was supplied by Westinghouse from its Sunnyvale plant and from warehouses in California.

As McCarley pointed out, this type of power system is ideal for his type of plant, using many kinds of small machines. It's simple, highly efficient and flexible.

### West's biggest private air power system

... continued from page 49

supplies 1,100-psig. air at 12 lb. per min. with a discharge temperature of 1,025 deg. F. This system is used to test high pressure valves requiring low flows and high temperatures.

Behind this pacemaker project were these men and firms:

General layout, supervision of design, installation, etc., was AiResearch plant engineer LaMar C. Nielson, with liaison handled by his assistant, Ted R. Soderberg.

Design of the installation to AiResearch specifications was handled by the Ralph M. Parsons Co., Los Angeles. General contractor was Kitchell-Phillips. The facilities operate under the direction of test facilities supervisor Donn W. Loper.

Major suppliers include: compressors—Clark Bros. Co.; vacuum set-up—Ingersoll-Rand; dynamometers—General Electric. Industrial Engineers, Inc., Los Angeles, designed and built the heaters to AiResearch specifications.



## Special Pacemaker Award

# Water Wheel Power Keeps Rolling Along

**This plant uses 11 water wheels to power 90% of its machinery. Going strong since 1870's!**

**B**ACK IN THE GOLD RUSH DAYS, when you wanted power you tapped the handiest natural resource. That's *water*—in the Mother Lode town of Sutter Creek, Calif.

So when Sam Knight built his foundry back in the 1870's he fashioned a water wheel of wood with cups fastened to the rim. Later, he cast a wheel with buckets in one piece. In 1875 he patented a slotted nozzle to direct water against the wheel.

That's how it was in those days. And that's how it is today. Things have been running so smoothly with the water wheel set-up that *90% of the machinery is still run by water power!*

Herman Nelson, the present owner of the Knight Company, explains the operation:

"We get water piped in by Pacific Gas and Electric Co., maintained at 125 lb. pressure. The water powers 11 wheels ranging from 1 to 15 hp. Pressure on the wheels is regulated by valves, except the main wheel where the position of the slotted nozzle regulates pressure.

**TURNING UP THE POWER**—Herman Nelson, present owner of the Knight Company, operates the lever of the slotted nozzle to regulate the flow of water against the main water wheel.



**BIGGEST AND SMALLEST**—Louis Boitano compares the smallest (1 hp.) wheel with the largest (15 hp.). Eleven wheels provide power for 90% of plant's machinery.

"The main wheel powers the machine shop, two wheels are used in the foundry and the rest power other equipment. These include lathes, drill presses, milling machines and many other types of equipment.

"Power is transmitted from the water wheels through flat belts and pulleys. In fact, many of the original shafts and pulleys are still operating."

Mr. Nelson admits that there is about a 15% loss of power in transmission, but he notes there is still plenty of power to operate the largest machines. Fact is, the company even has one of the largest lathes in the state—boasting a 14 ft. face plate.

"We don't have many problems with this system," continues Mr. Nelson. "If power runs low we just call up the water people and have them turn up the pressure. As far as the water wheels are concerned, we just have to oil the main bearings once a week. And outside of replacing a belt once in a while, we have no maintenance trouble.

"We'd probably keep on using water power for all other machinery we add, but our supply is limited. So for machines we've added recently we've had to use electricity. And it looks like we'll have to continue to use electricity for future expansion."

How much does the water power cost? Mr. Nelson says that his water bill is around \$60 a month for the 11 wheels. The company does around \$100,000 worth of business a year.

And the water power is worth the cost, says Mr. Nelson, because it assures reliable power for his foundry and machine shop that "hasn't missed a payday since 1873!"

**More pictures on next page . . .**

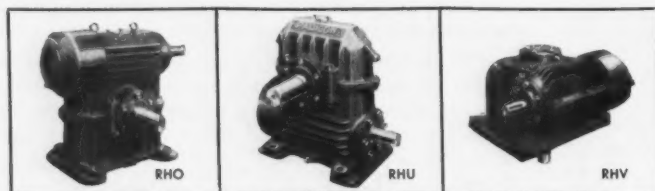
**Conveyors • Hoists • Agitators • Screens  
Deckers • Filters • Food Machinery . . .**



## **WORM GEAR REDUCERS**

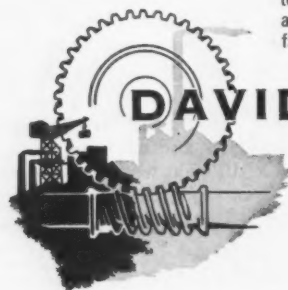
To many industrial operations, the speed reducer is an all-important unit. It must be efficient, rugged and reliable.

That's why fan-cooled Radicons, like the models below, are being specified by manufacturers of mining and process industries equipment. Within the past year hundreds of Radicons have been delivered—no waiting for the size or ratio desired—no trouble after installation!



Check Radicon's ability to withstand extremes of temperature, dust, dirt and rain—find out how a Radicon Speed Reducer can eliminate high initial cost and maintenance.

Immediate delivery RHU 3" to 12", RHO and RHU 4" to 12"—all standard ratios from 5:1 to 60:1. Packaged Drives supplied by authorized David Brown factory branches and distributors.



**DAVID BROWN, INC.**

999 Beecher Street, San Leandro, California  
6025 Atlantic Boulevard, Maywood, California

**RADICON, the original fan-cooled reducer . . . Winner 1957  
"Blue Ribbon" Mining Award**

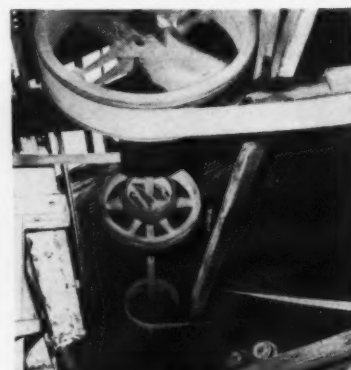
... for more details, circle No. 53 on Reader Service Postcard  
See Directory listing page 112

## **Water Wheel Power**

(continued)



**MAIN WATER WHEEL** showing how power is transmitted to machinery. This system of flat belts, wheel and shafts provides a simple and effective means of getting power to where it is needed. Power loss is about 15%.



**AN OVERHEAD LOOK** at a few of the dozen belts and wheels which power machinery. Much of the power transmission equipment has been in use since the 1870's.

IMPROVING OVERALL  
OPERATION THROUGH  
**GERLINGER**  
MASS-HANDLING



## He moves a 30-oz. lever; the Gerlinger moves 30,000 lbs.

Where extra power is needed to lift, move and stack capacity loads up to 40,000 pounds, Gerlinger giants like this one do the job like no other fork lift trucks built. And do it with instant fingertip control!

More and more industrial plants, mills and foundries are finding out that top production and profits go hand-in-hand with the mass-handling efficiency you get with a job-proved Gerlinger.

You'll see your investment pay off almost immediately—made possible through Gerlinger features like these:

- *Pivotal-mounted steering assembly*  
—stabilizing load on any road
- *One-lever lift-tilt control*  
—positioned for safer operation
- *Counter-active weight distribution*  
—better traction, maneuverability
- *Heavy-duty steel channel frame*  
—bonus years of reliable service

- *Maximum-power torque converter*  
—smoother driving, less wear
- New records of production and profit are the usual report when Gerlinger Fork Lift Trucks are on the job. Get latest catalog and see the many ways you will benefit. Write Gerlinger Carrier Co., Dallas, Oregon.

Leaders for 38 years  
in building Fork Lift  
Trucks and Carriers

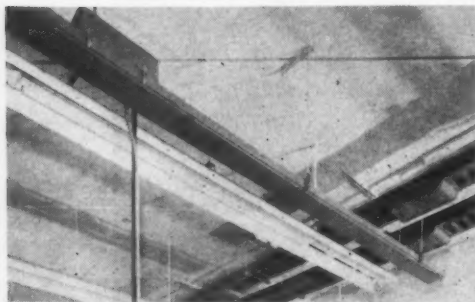


Gerlinger Carrier Co., Dallas, Oregon, is a subsidiary of Towmotor Corporation, Cleveland, Ohio

... for more details, circle No. 54 on Reader Service Postcard



**ABOVE**—Power for testing machines is supplied from trolley bus duct above. The trolley duct permits extreme flexibility as the circuit breaker slides along to any place on rail.



## Power system as supple as it is HUGE

... continued from page 45

that makes Marchant one of the best illuminated plants in the West.

Marchant's IBM central control system sends signals over the entire electrical system to automatically perform as many as 40 off-on functions.

Command signals, initiated by the central operations panel through the transmitter, are superimposed on 60-cycle wiring. These electronic impulses, transmitted to the coded relays in the systems, provide the means of remote, automatic operation of many functions.

For instance, a signal is used to automatically start up screw machines two hours before work. Heating, ventilating and lights are turned on automatically. And the system will be used to turn on valves, boilers, machines of all kinds, etc.

A master clock controls all other time clocks and time stamps.

An outstanding feature is the circuit-breaking and switch-over mechanisms. Substations are designed so that any short circuit fault in the line will cause the faulty section to be cleared with minimum power loss.

Should a fault occur anywhere in the 12,000-volt system, one of the

**LEFT**—This shows how Flex-A-Power bus duct is hung from ceiling on hanger hooks. Circuit breaker rests on top of duct. At right is a run of low voltage drop busway, going from substation to distribution panels.

### Electrical Data—Marchant Calculators, Inc. (new building)

1,200 miles of wire

320 miles of conduit

8 miles of light fixtures

5 miles of under floor duct

16 miles of fluorescent lamps

8,395 kva. in entire installation

75,000 amps. of interrupting capacity  
(can draw this amount of power)

50 tons of substations

25 tons of switchgear

Installation by California Electric Company



**BAY STATE GRINDING WHEELS**  
are available to you through  
the following Western distributors:

#### ARIZONA

Flagstaff: Arizona Welding Equipment Co.  
Phoenix: Arizona Welding Equipment Co.,  
DiEugenie Tool Center, Inc.  
Tucson: Aweco Supply Co.

#### CALIFORNIA

Hawthorne: Sonnet Supply Co.  
Los Angeles: Barker Foundry Supply Co.,  
E. A. Key Co., Ladish Pacific Division,  
Republic Supply Co. of California.  
San Diego: Bailey Equipment Co.  
San Leandro: Republic Supply Co. of  
California.

Torrance: National Supply Co.

#### COLORADO

Cripple Creek: Union Supply Co.  
Denver: Union Supply Co.

#### IDAHO

Parma: Transmission Products Div. of  
Parma Water Lifter Co.  
Pocatello: Pocatello Plumbing & Industrial  
Supply.  
Boise: Spencer Supply Co.

#### NEVADA

Las Vegas: Inland Service & Supply Corp.,  
McQuary Supply Co.

#### NEW MEXICO

Carlsbad: Carlsbad Supply Co.

#### OREGON

Eugene: Harmer Mill & Logging Supply  
Company.  
Portland: Harmer Steel Products & Supply  
Co., Wall-Western, Inc.

#### UTAH

Helper: Carbon Transfer & Supply Co.  
Salt Lake City: Production Tools, Inc.

#### WASHINGTON

Moses Lake: Columbia Basin Machine Co.  
Seattle: J. E. Haseltine & Co., Inc.  
Spokane: Kilmer & Supply Co.  
Tacoma: Webster-Robinson Machine &  
Supply.

### BAY STATE ABRASIVES



Bay State Abrasive  
Products Co.

Westboro • Massachusetts  
... for more details, circle No. 55





Bay State abrasive engineer Don Kennedy put in enough years in the Navy to learn about rust removal and other grinding jobs the hard way. Whatever your company's grinding problems maybe, you'll find Bay State representatives like Don Kennedy ready to help and competent to work out practical solutions.



**They're wearing  
his "hat" wheels\***

**... and they wear well**

When Bay State's now-famous "hat" wheels\* were first introduced at a large East Coast shipyard, they caused quite a sensation. Here were revolutionary new grinding wheels that tore off metal like cup wheels but were much less heavy . . . that handled as easily as coated abrasive discs but cut faster, lasted longer and did more work at lower cost.

In addition to outstanding product performance, however, Bay State offers prompt, intelligent service. Sales engineer Don Kennedy not only works with top supervisors; he gets out on the job with the operators and digs into their problems, too.

As a result, his recommendations are both practical and specific . . . Blue Flash for speed and heavy stock removal . . . Bayflex to resist loading on soft metals . . . Saf-T-Cut for longer life on hard, jagged surfaces . . . DuraCut for blending and finishing broad areas.

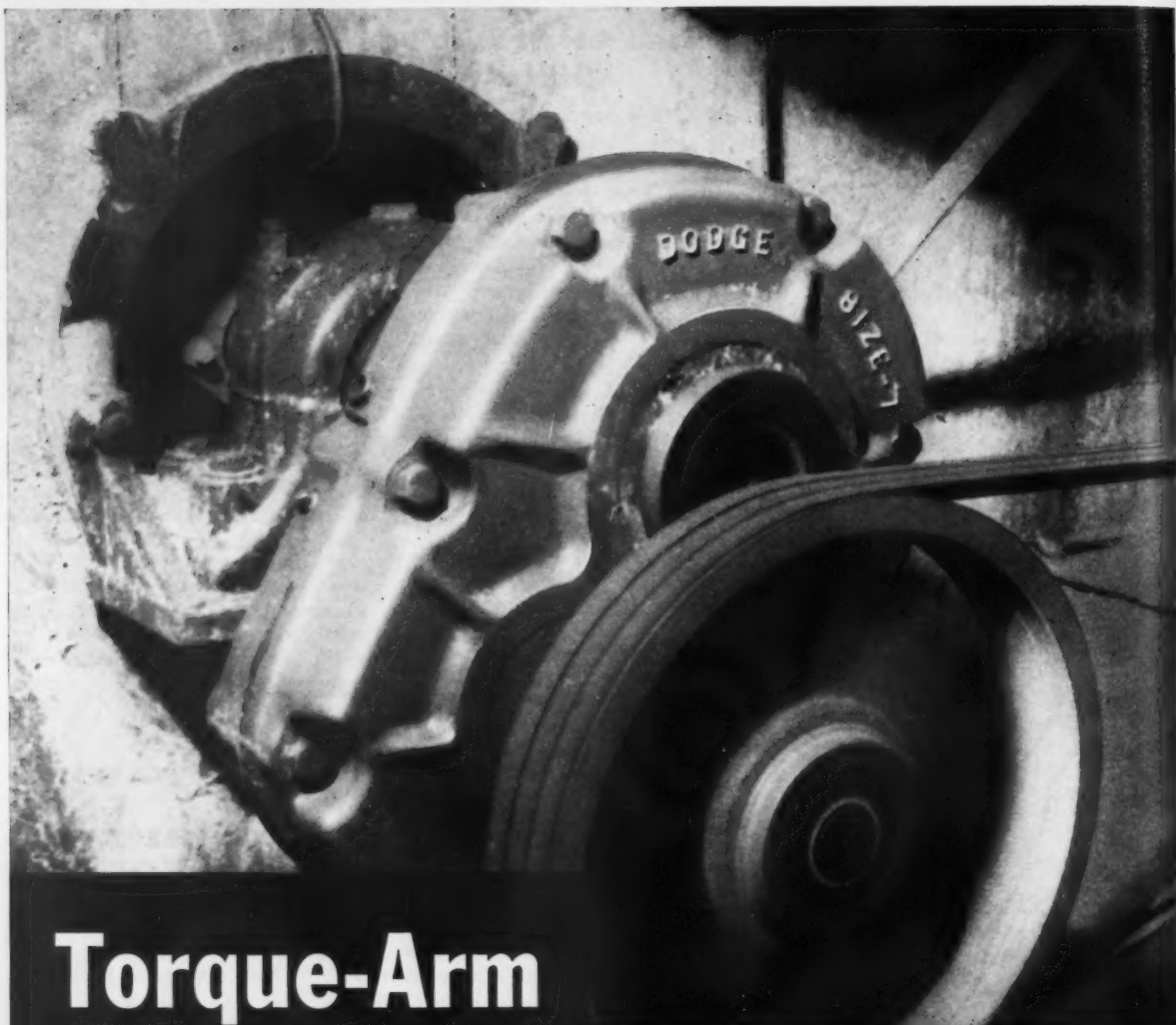
*\* Raised hub disc wheels, reinforced for extra safety.*



## **BAY STATE ABRASIVES**

Bay State Abrasive Products Co., Westboro, Massachusetts  
Branch Offices and Warehouses: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh. Distributors: All principal cities. Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ontario.

... for more details, circle No. 56 on Reader Service Postcard

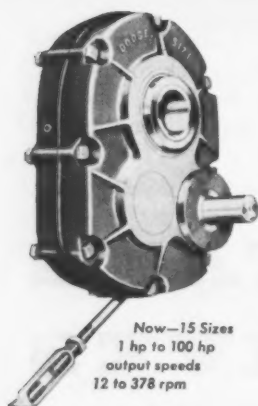


# Torque-Arm

## SHAFT-MOUNTED SPEED REDUCERS

Size 7 Torque-Arm Speed Reducer on agitator in paper mill

**Save Up to 1/3 in Installation**  
**—Deliver 97% Efficiency!**



Now—15 Sizes  
1 hp to 100 hp  
output speeds  
12 to 378 rpm

Easy to install! Mounted directly on the driven shaft. Locked at both ends. Dodge Torque-Arm Speed Reducer requires no foundation, no flexible coupling, no sliding base, and there's no lining-up problem. Amazing economy is matched by efficiency in operation—up to 97%.

Unit is driven through V-belt drive. Stock Taper-Lock Sheaves prescribed for each job permit speed ratios re-

quired. Tri-Matic Overload Release and backstop available, if desired. Dodge Torque-Arm is America's most complete line of shaft-mounted Speed Reducers. Ask your Dodge Distributor—or write us.

DODGE MANUFACTURING CORPORATION  
6600 Union Street, Mishawaka, Indiana

**CALL THE TRANSMISSIONEER**, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new methods. Look for his name under "Power Transmission Machinery" in the yellow pages of your phone book—or write us.



**DODGE**  
of Mishawaka, Ind.

... for more details, circle No. 57 on Reader Service Postcard  
See Directory listing page 116

WESTERN INDUSTRY — September 1957

main high voltage breakers will open as dictated by the protective relays. A storage battery is used to assure adequate power for opening the breakers under any condition.

If you study the schematic diagram, you'll see that this system is double-ended, with transformers at either side of the circuit breaker. You'll notice that by closing the cross tie breakers, power can be switched from one transformer to another.

Then maintenance personnel can manually switch over the power from one transformer to another. In switching over, a certain routine must be followed. To make sure of this, there is a series of safety locks and keys which will allow the maintenance man to perform a function . . . only if a prior one has been completed in proper sequence.

Maintenance men will be thoroughly

schooled in these procedures and written instruction will be handy for quick reference.

Marchant will occupy its new plant in stages. The first move (the assembly division) was completed recently and the next moves (manufacturing and administrative divisions) will be conducted on into next year.

When these various moves happen, the connecting of machinery can be done very quickly and easily. And if the location of machinery must be changed—or more equipment added—the power system can easily be adjusted to the new requirements.

That's the beauty of Marchant's new power setup. It's big, and—like a star halfback—it has the agility and ability to get anywhere in Marchant's 10 football fields of space.

## New tripping bar on hydro press safeguards operators, material

**SAFEGUARDING AN ARM OR HAND**, or piece of material from being lopped off is the function of a new safety device designed by John D. Crevier, an electrical engineer from Burbank, Calif.

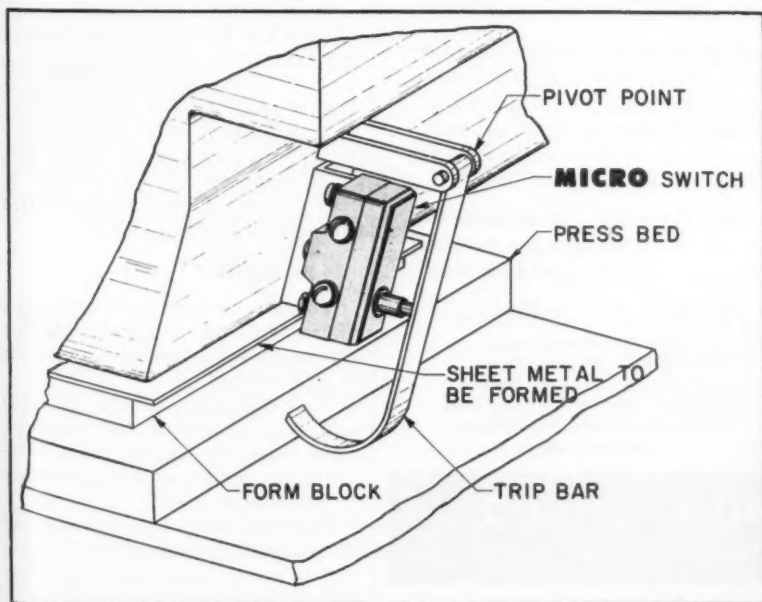
As shown in the sketch below, Mr. Crevier has installed a tripping bar all around a hydro press to provide safety to press operators and loaders.

If the press was lowered while the workman had his hand extended under it, the trip bar would touch his

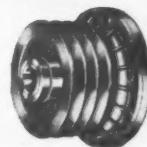
hand or arm. This in turn would trip the Micro Switch which is connected into the control circuit to throw the press into the "raise" position—preventing injury to the workman.

This safety feature also is a material saver. In the event that a forming block or a piece of metal sheeting to be formed extends outside the press bed, the trip bar will be actuated, saving the part.

One Micro Switch is required for each of the four sides of the press.



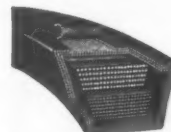
**DODGE PRODUCTS**  
you should know



**FLEXIDYNE**  
THE DRY FLUID DRIVE  
100% efficiency at full load!



**DODGE-TIMKEN**  
America's Quality Pillow Blocks!



**SEALED-LIFE V-BELTS**  
The life is sealed in!

### Write for Bulletins!

- ☒ Flexidyne Dry Fluid Drives and Couplings. Bulletin A-640-A.
- ☒ Roller Bearings. Load ratings, dimensions, etc. Bulletin A-638.
- ☒ Sealed-Life V-Belts. Complete data and sizes. Bulletin A-606-A.

DODGE MANUFACTURING CORPORATION  
6600 Union Street • Mishawaka, Indiana

**DODGE**  
of Mishawaka, Ind.

... for more details, circle No. 58  
See Directory listing page 116

## Power Loss Cured

# New V-belt installation cools down hot operation

**I**T'S NOT funny when your product is going up in smoke . . . and engineers at the Ukiah (Calif.) mill of the Masonite Co. weren't laughing when their masonite caught on fire.

How did this happen?

The mill was using 7 groove, C section V-drives to power fans in the tempering kilns. But there was considerable power loss from slippage. The re-

duced amount of air circulating in the kilns raised the temperature to the point that the masonite actually caught on fire!

And, the V-belts had to be changed every six months.

So the engineers at the Ukiah mills scouted around to find a belt that



## YEARS OF SERVICE

...for fifty years Pacific Pumping Company has consistently improved pump design and pumping efficiency. A continuing program of research, standardization and sound engineering has earned recognition as "The Best in the West."

**PUMPS FOR INDUSTRY**

## ...and now **PACIFIC** **SUBMERSIBLE** **NON - CLOG** **SEWAGE PUMPS**

### COMPACT AND EFFICIENT SEWAGE EJECTORS

Complete pump-motor unit lowers into sump or pit and operates under water. Electrode controls and automatic switch install below working surface. Designed for continuous operation under extreme heavy duty or flood conditions.

High efficiency Pacific Non-clog sewage pump with choice of single or 2-port impeller couples to factory sealed motor filled with highly refined dielectric oil — seals out moisture, vapors, corrosive gases and abrasives ... seals in lifetime lubrication.

Wide range of sizes and capacities.  
Installs in any position,  
and in every type of pit.

SEND FOR BULLETIN 1850.7

Other types for Industry  
Centrifugal ... Split Case Pumps  
Self Priming ... Circulator Pumps  
Fire Pumps ... Paco Turbine Type Pumps  
Condensate and Boiler Feed Pumps  
...and many others



**PACIFIC PUMPING CO.**  
Manufacturers & Distributors of Pumps for Every Service  
OAKLAND - PORTLAND - SEATTLE - LOS ANGELES

MAIN OFFICE AND FACTORY—9201 San Leandro Street, Oakland 3, California

... for more details, circle No. 59 on Reader Service Postcard



**NO SLIPPAGE**—H. C. Toler, tempering and coating plant foreman, Masonite Corp., Ukiah, Calif., using a hand tachometer to prove there is no slippage with the Browning Poly-V belt which is driving the fan on the kiln. Thus, there is no power loss and temperature can be held to desired levels. Watching with interest is **Hod Branson**, sales manager, Holz Co., Ukiah, Calif., who sold the belts to the Masonite Corp.

would solve their problem. Their solution: Browning Poly-V belts to drive each kiln. The drives were secured from the Holz Co. in Ukiah.

Each kiln has two five-ft. diameter Sturtevant fans driven by 50 hp. a.c. motors. With the Browning Poly-V belt, temperature can be maintained at the desired level in the kilns, regardless of temperatures in the mill. During summer months the temperature reaches 120 deg. F. in the area where the drives are located.

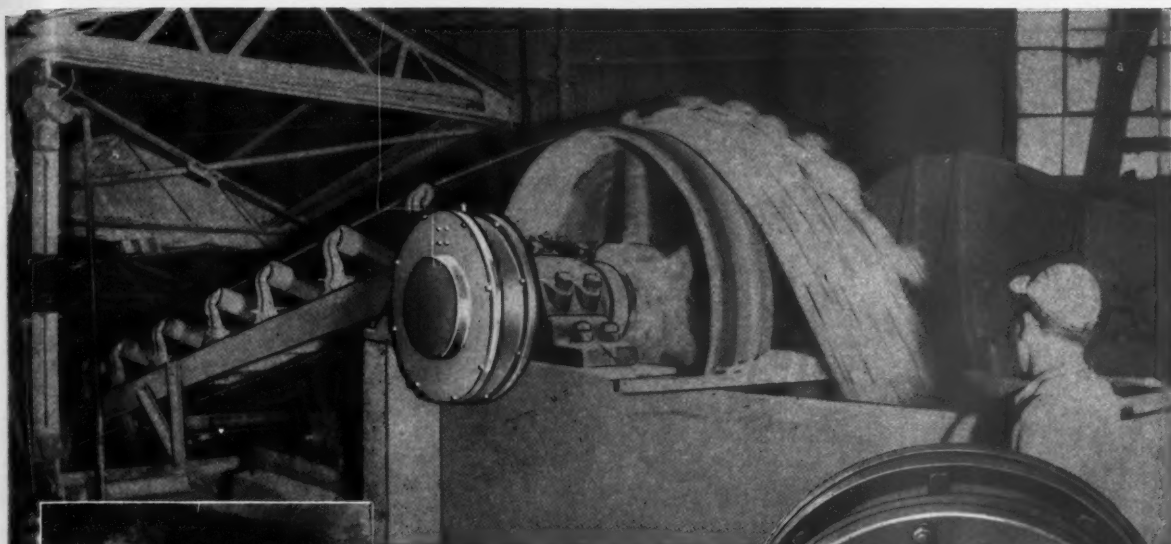
### Longer life: four to one

The belts were put in two years ago, and all indications point to the fact that they won't have to be changed for at least another year.

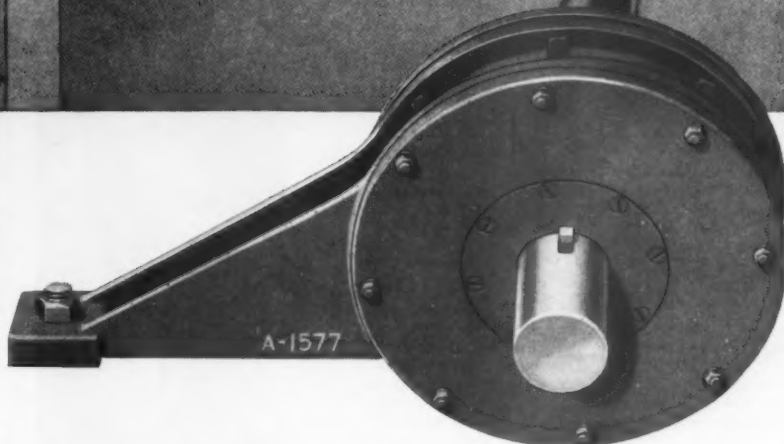
Thus, the Poly-V belts give full power to the fans in the tempering kilns, reduce the temperature to working safety, and are outlasting ordinary V-belts four to one.

Masonite Corp. has converted all three kilns to Browning Poly-V drives and is considering converting other difficult drives to Browning Poly-V.

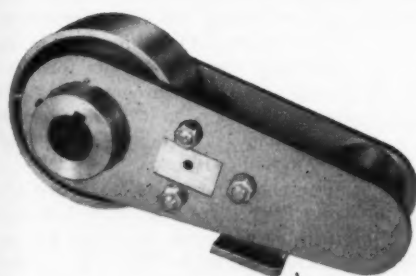




The Belt Conveyor, shown above is 48 inches wide and 1200 feet long. An S-A Totally Enclosed Hold-Back prevents a disastrous reversal of this heavily loaded belt during normal operating delays or in case of a power failure.



## Prevent the reversal of conveyors and elevators with **STEPHENS-ADAMSON** TOTALLY ENCLOSED HOLD-BACKS!



**S-A STANDARD ROLLER TYPE HOLD-BACK** ... provides all of the same outstanding advantages with the exception of the Totally Enclosed Design. Ruggedly constructed ... economical ... stocked for immediate delivery.

### OUTSTANDING ADVANTAGES:

- Engages without shock ... instantly holds ... instantly releases when power is resumed.
- Eliminates flooding of feeder points...protects men and equipment.
- Balanced design ... no ratchet to become fouled ... quickly and easily installed ... provides years of dependable, trouble-free operation ... may be installed in any position!
- Totally enclosed design prevents entry of dust and dirt ... economical to purchase, operate and maintain.
- Available in bore sizes from 1 7/8" to 12" ... stocked for immediate delivery.

Write today for complete information ...  
Request Catalog No. 557.

STANDARD PRODUCTS DIVISION  
**STEPHENS-ADAMSON**  
MFG. CO.

85 Ridgeway Ave.,

Aurora, Illinois

... for more details, circle No. 60 on Reader Service Postcard  
See Directory listing page 132

83

# Buy GOODALL and Save...

*Through Long, Reliable  
Service From* **BELTING**  
**FOR EVERY PURPOSE**

**"SUPER TRIPLE-S."** Goodall's finest Bulk Conveyor Belting . . . with a long-established record for outstanding quality and reliability. Used for handling crushed stone up to 10", ores, slag and other abrasive materials, wet or dry.

**"TRIPLE-S"** and "La Crosse" will serve with equal efficiency and economy in less severe services.

**"HI-CLIMBER"**® — The Incline Conveyor Belting with a special "Diamond"-Grip molded surface that keeps packages from sliding or slipping on inclines up to 30°. Other brands available for flat or incline conveyors.

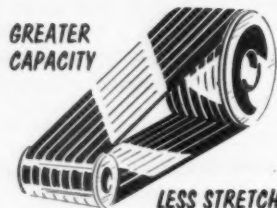
**"SKY-KLEET"**® — The name that identifies specially-designed rubber cleats available on Goodall Conveyor Belting used for handling packages, small parts, stampings, minerals, chemicals, etc., on fixed or portable conveyors. Cleats are integrally molded to the belt, and spaced at any required distance.

## "POWER KING" High Capacity V-BELTS

Built with larger, stronger, endless twin grommets to transmit greater H.P. This means fewer belts per drive, reduction in over-all weight, and less space required for any given load. The only high-capacity belts with so little stretch that the efficiency of the drive is not affected.

Greater flexibility gives "Power King" V-Belts one-third more gripping power than other types . . . they pull heavier loads.

Switch to "Power King" V-Belts, and note the savings they assure through increased capacity and efficiency.



Contact Our Nearest Branch for Details and Prices

**"If it's GOODALL, it MUST be Good!"**

Standard of Quality—Since 1870



HOSE • BELTING • FOOTWEAR • CLOTHING  
AND OTHER INDUSTRIAL RUBBER PRODUCTS

## GOODALL Rubber Company

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.  
Branches and Distributors Throughout the United States and in Canada

### Make it automatic with hydraulic power

... continued from page 47

tracer stylus against the pattern.

Consistency of duplication from the pattern is one big advantage of tracer production. In one large Southern California aircraft plant tracer-machining a critical part, there were only four rejects in 22,000 parts caused by dimensional error. And these four rejects can undoubtedly be attributed to the operator's hand faltering on the tracer stylus while he was guiding it around the pattern.

While the use of tracer-equipped machines is largely confined to the machining of aluminum at this time, it is only because aircraft and missile facilities were the first to employ tracer-equipped machines in large numbers. It will be obvious to any machinist that there is no connection between tracer control and the material being worked. The directional control advantages of the tracer, and its ability to resolve directions of movement which involve two or three axes into the proper vectors of machine movement, can be applied in machining any material.

### Conversion to tracer machining

One such conversion for tracer-machining a heat treated 4340 steel forging was made on a Becker 4B vertical mill. This conversion employed a three-dimensional tracer, converting the mill into a high speed duplicator which can be operated with semi-experienced help. Production tolerances on the conversion are held to plus-or-minus .005 in., but repetitive tolerances are held within .0005 in. In converting, the lead screws were replaced with tracer-controlled hydraulic cylinders to obtain the same relative motion of table, saddle, and other moving parts.

Engineering trends that prove advantageous in one field of industry will usually provide the same advantages in other fields. This is true of the trend toward designing for tracer production. The leeway provided a design engineer in simplifying, beautifying, strengthening, and reducing the weight of a product, when he can ignore limitations imposed by machining the part, are obvious.

Knowledgeable machine shop operators are keenly aware of this fact. They know that before very long, the tracer-equipped machine tool will become as much of a shop necessity as ordinary engine lathes are today.

... for more details, circle No. 61 on Reader Service Postcard  
See Directory listing page 120



Operators in a California metal working plant like the way their Allis-Chalmers 4,000-lb lift truck maneuvers, even in close quarters.

## Operators like them best...drive them best

### ALLIS-CHALMERS FORK TRUCKS



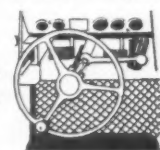
"Feels like a car with power steering," says Arthur B. Wiley, fork truck driver at a Michigan factory. Further, an Allis-Chalmers truck "works fine in narrow aisles. It has no controls on the floor — easy to get on and off of."

Center-point steering gives the same easy responsiveness as a moving auto. Full 18-in. steering wheel completes the familiar "feel."



"Must have been engineered for the driver," says operator Gast at a Wisconsin foundry. "Shifting is handy and I like where the controls are located. Have plenty of room for driving."

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**Put Yourself in the Driver's Seat** tells more about why operators "like them best... drive them best." Send for your free copy of this interesting booklet — and see your Allis-Chalmers material handling dealer.

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# BEST POWER MANUALS

**25 on clutches, fluid drives (p. 86)**

**25 on industrial air compressors (p. 90)**

**40 on electric and automatic switches (p. 98)**

THIS MONTH'S unique WESTERN INDUSTRY self-service library appropriately covers equipment important to you in determining pacemaker solutions to your current problems in plant power—automatic and electric switches, industrial air compressors, and industrial clutches and fluid drives.

Collected during the past three

months by WESTERN INDUSTRY editors for this special edition, these outstanding how-to-do-it manuals are offered free of charge to production and plant operating men in Western plants. Special permission has been obtained from each manufacturer to make this possible.

You are invited to check the concise listings appearing on pp. 86-106 and

select those manuals that appear to offer the most timely help in solving your plant power problems. Circle appropriate key numbers on this month's WESTERN INDUSTRY Reader Service Postcard (page 141), and we will be glad to see that you obtain your entire selection promptly.

Note that this offer expires on November 30, 1957.

## 25 BEST MANUALS ON CLUTCHES, FLUID DRIVES

### Over-running backstopping, indexing clutches

This 28-page manual contains complete information on sprag clutches for over-running, indexing and backstopping applications. Described and illustrated is a wide range of actual current uses for these clutches in all three categories—from automobile transmissions to annealing furnaces; from duplicating machines to punch presses, and from cement plant conveyor belts to jet aircraft control actuators. *Formsprag Co.*

... for your copy, circle No. 160

### All about Flexidyne—the dry fluid drive

First in a two-part literature offering about a dry fluid drive is a 12-page manual with full color illustrations of the drive and a cross-section engineering drawing showing design features. Easy-to-use selection charts show two methods of choosing the proper unit and there are explanations of the flow charge and the thermal protecting unit. Supplementing this piece is a new four-page bulletin that describes larger sizes of the drives and couplings. *Dodge Manufacturing Co.*

... for your copy, circle No. 161

### Two manuals on fluid drives—1 through 25 hp.

Similar manuals about adjustable speed gyrol fluid drives deal with those of 1 through 25 hp. in the first, and those of 7½ through 800 hp., in the second. Advantages and applications, components and operation, dimensions and specifications are given in each, along with diagrams and selection tables, for both variable and constant torque. *American Blower Corp.*

... for your copy, circle No. 162

### Data on four types of industrial clutches

An eight-page composite of four technical bulletins for specific products, this manual describes over-running, single revolution and slip clutches and centrifugal clutch couplings. Applications for which each type is recommended, dimensions, blueprints and other data are given for all four. Individual bulletins are also available for each of the categories. *The Hilliard Corp.*

... for your copy, circle No. 163

### 28-page manual on five fluid drive types

How you can start heavy loads smoothly, protect operating equipment and solve electric drive problems with this line of fluid drives is told in this 28-page guide book that covers electrofluid drive; electrofluid gearmotor; fluid, fluid gear and fluid coupling drive types. Types, features, arrangements and engineering data are included, plus selection tables and application photos. *Link-Belt Co.*

... for your copy, circle No. 164

### 88-page manual of transmission equipment

Selection tables, detailed drawings, weights and dimensions are featured in this comprehensive catalog that covers all Jeffrey transmission products. Clutches, shaft collars, couplings, pillow blocks, take-up gears, wheel hubs, holdbacks, chains and sprockets are included in the listing that has scores of products in the detailed index. *Jeffrey Mfg. Co.*

... for your copy, circle No. 165

### Catalog sections on clutches

Advantages and design features of Flaton automatic safety clutches are outlined in sections of the firm's catalog that gives selection information, a rating sheet, descriptions of the demountable hub and extended hub types, integral type, couplings, coupling type with shut-off and both hub types with shut-off. Blueprints and application pictures are included. *Flaton Machine Works.*

... for your copy, circle No. 166

### Photos and facts on Twin-Disc line

Each of the products in the broad line of this firm is described and pictured in this pocket-sized guide book. It covers friction clutches, power take-offs, marine gears, torque converters and fluid couplings. *Twin Disc Clutch Co.*

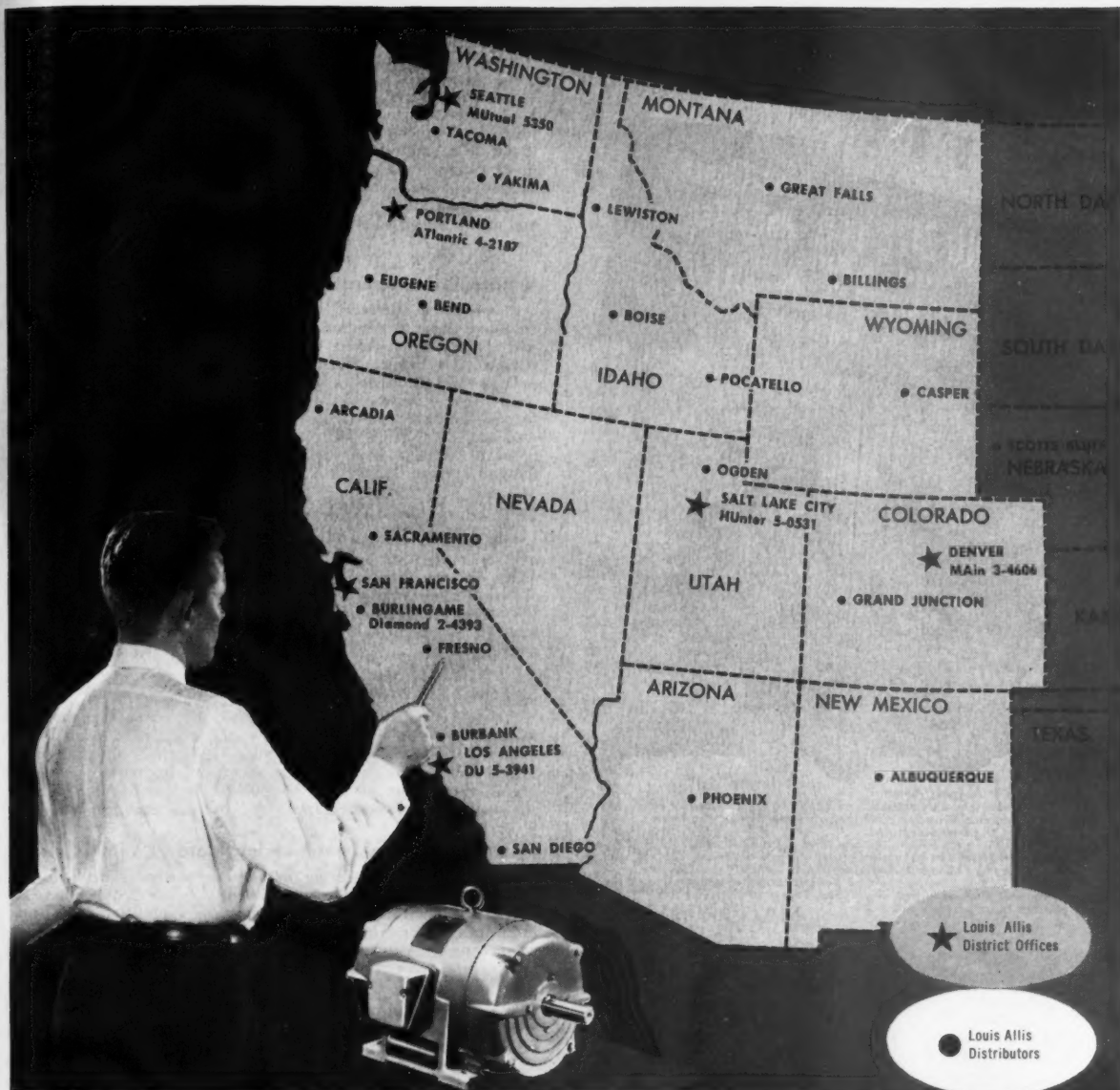
... for your copy, circle No. 167

### Rockford catalog covers many clutch types

In this catalog's 60-odd pages, almost every type of automotive and industrial clutch is described and illustrated with data on capacity, drive, weight, levers, etc. It covers various sizes of spring loaded types, over-center and Pullmore clutches that are multiple-disc. Similar information is given for the firm's line of power take-offs and gear reduction units. Many tables, charts and illustrations supplement the word descriptions of the product. *Rockford Clutch Div., Borg-Warner Corp.*

... for your copy, circle No. 168





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WESTERN INDUSTRY — September 1957

87

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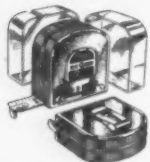
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88

**328 pages of power transmission data**

A fact-filled engineering catalog that covers the complete line of Dodge mechanical power transmission products has 328 pages of helpful information, sectional drawings, dimensions, weights, prices, application details and engineering tables. Virtually a manual on the entire subject, it has eight full pages devoted to a detailed index of all material in the catalog, making it easy to use for quick reference. A condensed index covers base plates, bearings, chains, clutches, couplings, Flexidynes (dry fluid drives), speed reducers, bushings, V-belt drive tables, sheaves, variable speed and other categories. *Dodge Manufacturing Corp.*

... for your copy, circle No. 169

**Maintenance, operating tips for clutches**

A two-piece literature offering about Dings magnetic clutch couplings contains a bulletin of handy instructions for maintenance and operating that covers function, erection, operation and maintenance. Installation, adjustment and wiring data are included, as well as lubrication and assembly methods. The other publication describes and illustrates the line which has two models for installations where clutch is normally operated in engaged, or disengaged, position. Blueprints detail components of each model and specifications are included. Brief facts are given on protective housings for the units. *Dings Brakes, Inc.*

... for your copy, circle No. 170

**Concise review of Conway clutch lines**

Slip mechanisms and overload release clutches in many models and series are described and illustrated in this manual's 23 pages. There are specifications and dimension data for several series, for sleeves, shifter collars, yokes and keyways, as well as for parts in the various series. Brief facts on special adaptations and eight other clutch types are given. *The Conway Clutch Co.*

... for your copy, circle No. 171

**Selection charts for Mercury clutches**

Selection charts for clutches to be used with gasoline engines and with electric motors are a feature of this eight-page manual, that includes operation, application and design details about the line. Tables show pertinent data for pulley or coupling requirements and overall dimensions for over 30 models. *Mercury Clutch Div. of Automatic Steel Products, Inc.*

... for your copy, circle No. 172

**Flexible couplings engineering data**

Selection and engineering data on a newly-designed line of standard couplings are presented in this 12-page booklet that also covers self-lubricating center member couplings. Standard couplings are those that have plus or minus 1 1/2 deg. angular misalignment capacity per gear engagement. Descriptive data is given briefly for several types of special purpose coupling variations. *American Flexible Couplings Div., Zurn Industries, Inc.*

... for your copy, circle No. 173

**Facts on utility clutch for marine, industrial use**

An easily installed, medium-priced utility clutch for low-powered marine and industrial engines is the subject of this data sheet that features sketches to show installation of the unit in boats with sket or strut-type mountings. Specifications, dimensions and price are given. *Arnolt Corp.*

... for your copy, circle No. 174

**Bulletin and supplement on power take-offs**

An eight-page bulletin and supplement cover this firm's complete line of mechanical power take-offs designed for all industrial applications, giving complete information on specifications, installation dimensions and allowable side-pull loads. The supplement is concerned with the air-operated model friction power take-off. *Twin Disc Clutch Co.*

... for your copy, circle No. 175

**Manual and price list for V-Belt Clutch**

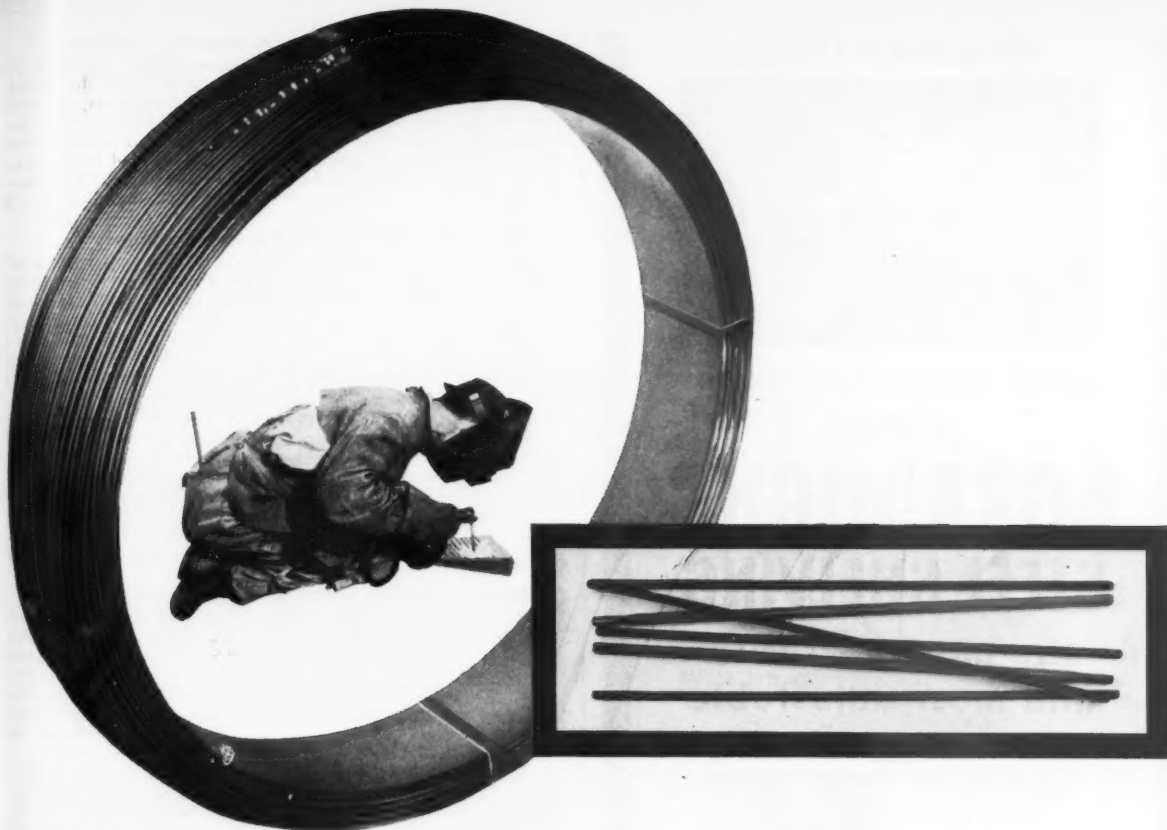
Features of the Ball-Lok clutch and how it works are concisely presented in this manual's ten pages that also cover the End-Thrust series, ball-bearing shifter collars, brackets and shifter forks. There are application pictures and sections of general information, selection and ordering data. *V-Belt Clutch Co.*

... for your copy, circle No. 176

**Friction clutches with toggle, high torque**

Eight design advantages are described and pictured in this eight-page manual on Link-Belt friction clutches that come in three types—with mounting sleeve, with mounting ring and friction clutch coupling. Selection tables are given for each type, with accompanying blueprints. Shifting yoke and fulcrum dimensions are included. *Link-Belt Co.*

... for your copy, circle No. 177



## When spec's call for close tolerances...

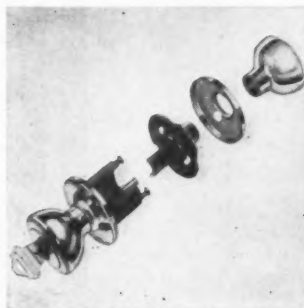
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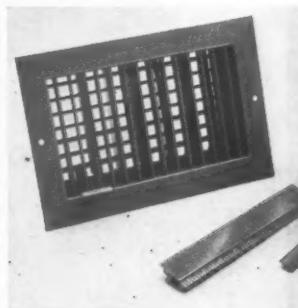
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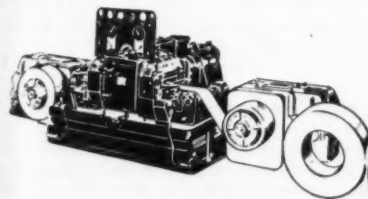
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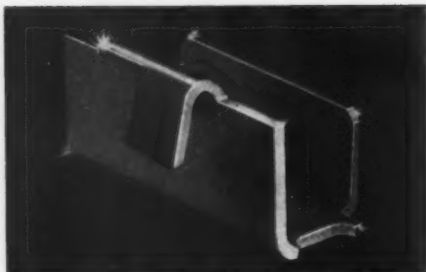
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90

#### Three spec sheets on Precisionspring clutches

An explanation of these positive action clutches and their advantages is given in the first of three publications on the subject. It includes typical installation pictures, showing them used with air filters, welding guns, electric hoists, etc. Two similar fact sheets give dimensions, engineering data and other pertinent facts for over-running ball bearing types, Series OB, and for the over-running sleeve bearing or plain type, Series OS and OP. *Curtis-Wright Corp.* ... for your copy, circle No. 178

#### Fluid power variable displacement pumps

Described in a just-off-the-press manual are the construction and principle of operation for Type D, one and two way variable displacement pumps that supply fluid power to constant displacement motors for a wide variety of variable speed drives. The 16-page booklet contains performance curves, specifications, oil circuit diagrams, eight styles of controls and a number of custom-built Power Paks. *The Oilgear Co.* ... for your copy, circle No. 179

#### Case histories show Amerigear couplings in action

Several power transmission problems solved by this line of couplings are a feature of this 12-page manual. Applications include those for heavy mill service, high speed turbines, hydraulic presses and others. Pictures and drawings illustrate the booklet which also shows how fully-crowned-tooth design contributes to the couplings' efficiency. *American Flexible Coupling Div., Zurn Industries, Inc.* ... for your copy, circle No. 180

#### Pneumatic friction clutch and brake unit

Features of the single disc press clutch and why it is self-aligning, fast-acting and cool-running are explained in a four-page brochure that illustrates both outboard- and crankshaft-mounted types. Inner workings of the clutch are shown by a large cutaway illustration. Positive engagement and disengagement, cycle-welding and ease of maintenance are other features described in the publication. *E. W. Bliss Co.* ... for your copy, circle No. 181

## 25 BEST MANUALS ON AIR COMPRESSORS

#### Literature kit with maintenance check chart

A compressor maintenance check-chart, a 12-page booklet on how to select an air compressor and three bulletins covering models with ¼ through 15 hp., 15 and 20 hp., and 25 and 40 hp., make up a literature kit that fully covers the compressor field. The check chart gives maintenance tips and lists for check-ups at weekly and three-month intervals. The manual for compressors up to 15 hp., has 30 pages of specifications, technical data and photos about many different models and accessories. *Curtis Manufacturing Co., Pneumatic Div.* ... for your copy, circle No. 182

#### Two new manuals cover water- and air-cooled types

Just off the press are two bulletins with up-to-the-minute facts about Unitair compressors and Industrial Air compressors. The first, dealing with air cooled, two-stage single acting units of V-vertical and semi-radial package design, gives specifications and dimensions for standard, low pressure and special high pressure models. Illustrations show typical installations, cross-section view of the compressor and design features. Second bulletin describes and illustrates single cylinder vertical design heavy duty, water-cooled single-stage, double-acting package type units in 14 sizes. Format and illustrations similar to the other bulletin. *Joy Mfg. Co.* ... for your copy, circle No. 183

#### Data on compressor that supplies oil-free air

A compressor for instrument control, food, dairy, distilling and similar industries, is described in Bulletin 1-1S. A single-stage, air-cooled unit, base- or tank-mounted, this compressor supplies 4 to 5 cu. ft. of oil-free air per min., and is suitable for discharge pressures of 40 to 100 psi. *Gardner-Denver Co.* ... for your copy, circle No. 184

#### Selection guides on Atlas-Copco compressors

Five descriptive pieces on Atlas Copco compressors consist of an eight-page manual on the AR series heavy-duty compressors; one of four pages on the CT medium-sized series; a second eight-pager on the NT continuous duty series for stationary or mobile air plants, and two leaflets that describe AR skid-mounted units and CT diesel-operated skid-mounted models. Photographs, cutaways, and text point out various applications, specifications and other pertinent data. *Atlas Copco Pacific, Inc.* ... for your copy, circle No. 185



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Strength, power and *payload*... that's what White offers the construction industry in its "9064". Since this baby requires no kid-glove handling, you'll see it only on the toughest jobs... hauling aggregates, as a dump truck or cement mixer... for that's the kind of rugged duty it was built to stand.

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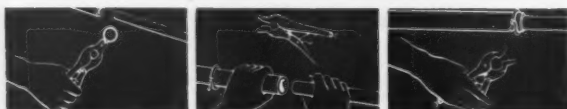
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### Installation and service manual for compressors

"Your Air Compressor," an 18-page installation and service manual, is filled with facts, pictures and sketches to aid in your use of Brunner compressors. It includes detailed blueprints and cut-aways, plus several pages about common air compressor service complaints, with nature, cause and remedy for each. An accompanying data sheet lists all of the firm's many single and two-stage automotive and industrial models with 1/4 through 20 hp. Brunner Division of Dunham-Bush, Inc. ... for your copy, circle No. 186

### Compressors, pumps, tanks and accessories

A cut-away drawing that points out 17 design advantages in this line of compressors is the opening feature of this 18-page manual covering several types of compressors, including remote tank and gasoline engine models; portable units; tanks; pumps, and some 20 accessories. The book contains a pressure and air delivery chart, installation data and facts on compressor selection. American Brake Shoe Co., Kellogg Division. ... for your copy, circle No. 187

### Two manuals on air motors, pneumatic devices

Functions, applications, valving arrangement, mounting styles and other pertinent facts about the Bellows air motor are presented in the first of this firm's two manuals. Its 20 pages describe and picture nine different types as to valve arrangement with several models in each category. Second booklet, eight-pages, four colors, deals with the air motor, the Hydro-check for use with it, and a series of complete work units built around the motor. These include drill presses; power and torque sensitive feeds; power infeeds; rotary tables, and work holders. The Bellows Co. of California. ... for your copy, circle No. 188

### Quick reference list of 23 Wayne compressors

A ready reference chart that refers the reader to following pages for more details is a feature of this 20-page manual covering Wayne Pump's complete line of compressors. Two other charts aid in selecting an air compressor for supplying various devices, and examples are shown for their use. Sectional views and other photos give further data. Wayne Pump Co. ... for your copy, circle No. 189

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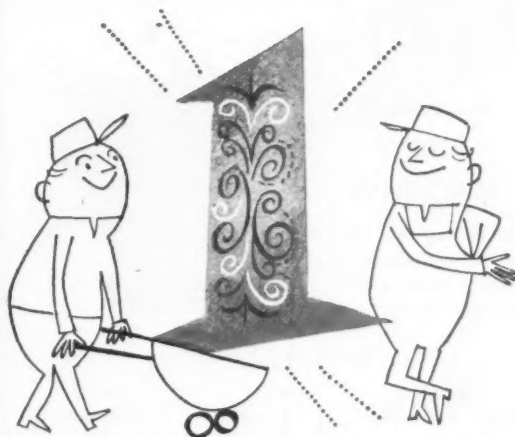
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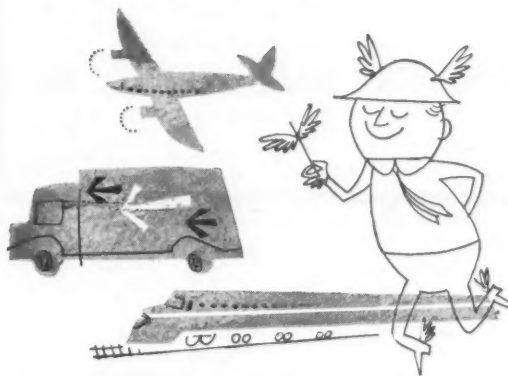
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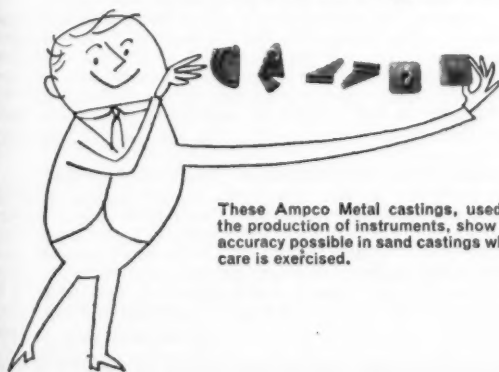
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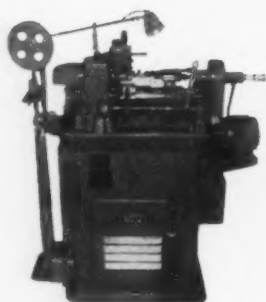
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### Complete 45-page guide to compressors

Designed not only to present the firm's line of compressors, but also as a text book and complete guide to those interested in air compression, this manual's 45 pages include full engineering information; detailed data for choosing the right compressor for a specific job and computation tables that, used properly will insure correct installation. An explanation of the coding system for easy identification of each model; specifications, blueprints, description and dimensions for each compressor, compressor outfit and accessory, and sections on controls are included. Compressors in this catalog range from 1/4 through 20 hp., but data on larger models of 25, 30 and 50 hp., are available. *Brunner Division of Dunham-Bush, Inc.*

... for your copy, circle No. 190

### Facts and photos on four compressor classes

Four manuals, each devoted to one class of Chicago Pneumatic's compressors, cover FE—horizontal balanced-opposed compressors; Y—package type stationary; O—steam driven horizontal duplex, and O-CE—motor-driven horizontal duplex compressors. All but the first contain about 20 pages, give design features, specifications and illustrations for various sizes, models. The one on Class FE is a six-page fold-out cardboard piece with similar data. *Chicago Pneumatic Tool Co.*

... for your copy, circle No. 191

### Light weight rotary compressor in 600 class

A 600 cfm. capacity rotary compressor that is light weight for economical hauling and easy handling is the subject of an eight-page booklet that points out, with pictures, over 30 design advantages, inside and out. Specifications and labeled photos of components supplement the book's description of the compressor which features unit-construction, side-by-side individual cylinders. *Le Roi Div., Westinghouse Air Brake Co.*

... for your copy, circle No. 192

### Air piping arrangement diagrams featured

Diagrams of air piping arrangements, specification charts, cut-away drawings and case history pictures are featured in the first of two Allis-Chalmers manuals. It describes operation and construction of single-stage water-cooled rotary compressors and vacuum pumps for practically all air or gas handling requirements, plus proper accessories. Second of the booklets discusses two-stage sliding vane type compressors for shop air, gas handling, drilling and other uses, and includes pertinent facts on the units, built in various sizes to deliver air at pressures from 60 to 125 lb. gage. *Allis-Chalmers Manufacturing Co.*

... for your copy, circle No. 193

### Eight-page booklet on pumps and compressors

Over a dozen models of a rotary compressor, with horsepower from 1/12 through 2, are described and pictured in this manual with similar sections on air motors and air and vacuum pumps. Blueprints show specifications and accompanying tables give dimensions and other data. Other literature is available on a large displacement compressor and on oil-less pumps made by the firm. *Gast Manufacturing Corp.*

... for your copy, circle No. 194

### Engineering specs on pressure pumps

This 16-page manual deals with a line of rotary positive vacuum or pressure pumps, air motors and gas boosters. It includes performance curves, physical dimensions and outstanding design features for both two- and four-wing types of pumps, plus facts on integral pump and motor units. Units covered go from 0 to 162 cfm., vacuums as high as 29.9 in., and pressures to 20-lb. gage. *Leiman Bros., Inc.*

... for your copy, circle No. 195

### Characteristics, advantages of turbo-compressors

Tips and technical data to help you in selecting and installing proper turbo-compressor equipment is presented in this 12-page manual about the application of these units, with over a dozen application photos. Handy tables include facts on pressure and vacuum ratings, orifice equivalents, pressure at other temperatures and higher altitudes, capacity and friction loss. Also available is a four-page leaflet on clean air for agitation of liquids. *The Spencer Turbine Co.*

... for your copy, circle No. 196

### Air-cooled compressors in five sizes, 80 to 125 psi.

Over 30 case history pictures of these Type 40 two-stage air cooled compressors illustrate the many industries and processes in which they are used, while a two-page listing tells why they are applicable in so many fields. Low operational, installation and maintenance cost, minimum attendance, small size and weight, and dependable service are some of the advantages described. Technical data, dimensions, ratings, etc., are given in tabular form for various models and sizes, which range from 25 to 100 hp., from 142 to 515 cfm. piston displacement. *Ingersoll-Rand Co.*

... for your copy, circle No. 197

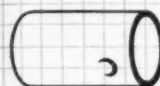




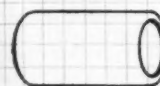
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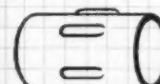
EXPANDING



DIMPLING



ROLLING



FLUTING



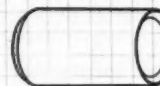
SWAGING

UPSETTING  
(Internal)UPSETTING  
(Internal-External)

REDUCING



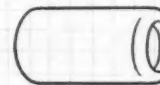
SPINNING

SLOTTING  
(Open)

CHAMFERING



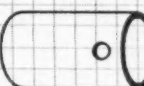
FLARING



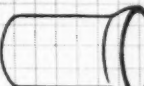
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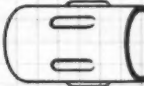
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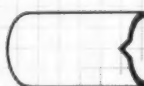
BELLING



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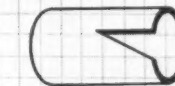
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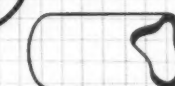
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BEADING  
(Expanded or Depressed)

SHAPING



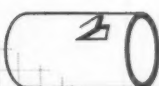
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96

### 44-page guidebook to industrial air compressors

Capacities, specifications and typical data for industrial air requirements from 200 to 2,000 hp. are given in this engineering catalog recently released by a firm that manufactures motor-driven compressors. *The Cooper-Bessemer Corp.*

... for your copy, circle No. 198

### Review of Hydrovane, tank-mounted rotary units

Questions and answers about compressors whose only moving parts are the rotor and sliding vanes are presented in a four-page report that points out advantages, design principles and other facts about these units. An accompanying piece explains how the compressors work, has a specification chart and one of physical dimensions for the various models that come with 2-, 3-, 5-hp. ratings. *Davey Compressor Co.*

... for your copy, circle No. 199

### Two books to help you choose the right compressor

Basic criteria in selecting an air compressor are presented in the first of two manuals to aid in compressor selection. A 12-page illustrated booklet, it also gives specific examples, using charts to aid in determining sizes and types of compressors best for every conceivable application. The second handy guide features a selector chart for determining the best horsepower compressor for particular use. This also contains specifications covering single and two-stage tank-mounted units, vertical mounted models and portable compressors. *Binks Manufacturing Co.*

... for your copy, circle No. 200

### Data on compressors—1/2 through 10 hp.

Specifications and descriptive data on over a dozen models of compressors appear in this four-page booklet that covers units for 1/2 through 10 hp. There are the MK series—two-stage two-piston heavy duty; FA—two-stage, four-piston; LA—single-stage, general purpose, and the CA, with 10 hp. *The United States Air Compressor Co.*

... for your copy, circle No. 201

### How to test your air compressor

How to test your present air compressor and how to select the right size compressors for your needs are made easy with the use of charts in this 18-page catalog. The manual features portable and stationary models from 1/4 to 15 hp. with specifications and pictures of several models and accessories. You'll find valuable hints on installation and maintenance as well. *The DeVilbiss Co.*

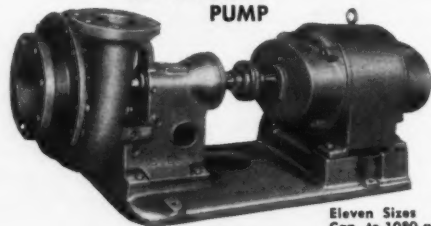
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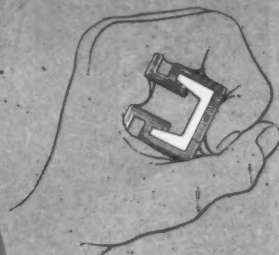
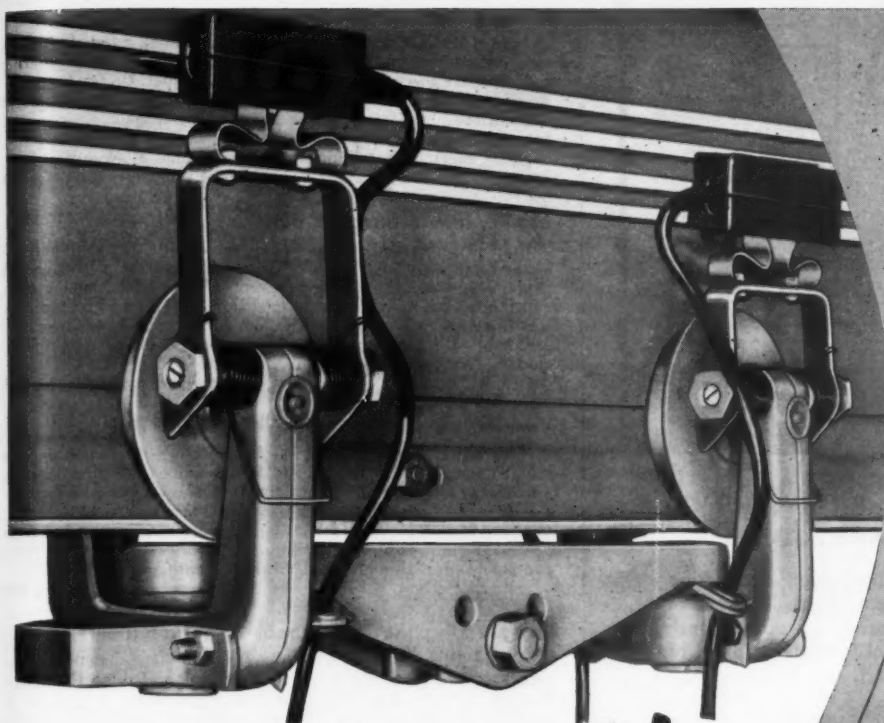
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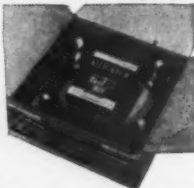
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98

### Motor-driven compressors—250 to 3,000 hp.

Duplex horizontal, motor-driven compressors, used frequently in process industries and for supplying plant air in manufacturing concerns, are the subject of this 28-page manual. Design and operational advantages are clearly detailed in text and many types of illustrations. Subject headings for the book include drive and types, running gear, coolers, cylinders and valves, accessories, capacity controls, installations and dimensions. *Worthington Corp.*  
... for your copy, circle No. 203

### Mechanical cleaner for purifying air lines

Help to compressed air users is offered with the Airidifier, described and illustrated in this eight-page engineering catalog that explains how use of the device prevents trouble with contamination and the damage it causes. Said to remove 92% of all moisture, oil, dirt and fine scale in the air line, the Airidifier and its advantages are detailed, with charts, tables, sketches and installation tips included. *The Logan Engineering Co.*  
... for your copy, circle No. 204

### Vacuum pumps and positive pressure blowers

Rotary air compressors that can be applied as vacuum pumps in sizes to deliver 30 lb. pressure psi. are described and illustrated in a four-page fact folder with specification tables for pumps (Type D) and blowers (Type A). There are eight sizes in each category, covering from 4 to 190 cfm. free air capacity, for pumps and from 6.9 to 192 cfm. for blowers. Data on accessories and on other types and models available included. *Crowell Manufacturing Co.*  
... for your copy, circle No. 205

### Compressing the facts about compressed air

... is the title of an exceptionally readable manual that explains compressors in a simple and engaging fashion. Taking the reader through primary steps to understand compression, it goes on to explain terminology in the field and values of certain design principles. Paragraphs and illustrations on installation follow, with do's and don't's for maintenance and inspection. A trouble-checking chart is another worthwhile feature of the book that concludes with a listing of nearly 90 industries or categories in which compressed air can be used, with several processes within each section. *Brunner Division of Dunham-Bush, Inc.*  
... for your copy, circle No. 206

## 40 BEST MANUALS ON ELECTRIC, AUTOMATIC SWITCHES

### Condensed catalog for Allen-Bradley products

Commonly used motor controls up to and including the size 4 rating, plus pushbuttons, limit switches and other accessories are described as to dimensions, features, specifications and prices in this catalog's 38 pages. Switches listed include single phase manual automatic transfer, multi-speed and reversing drum; starters are single phase, full voltage, combination reversing, multi-speed, manual resistance and reduced voltage types. Other items covered include a-c. and d-c. control relays, fluid dashpot and pneumatic timing relays, terminal blocks and auxiliary contacts. *Allen-Bradley Co.*  
... for your copy, circle No. 207

### 48 pages about drum, foot and limit switches

Drum controls for reversing, selection of speed, Star Delta motor control, series paralleling and many other types of circuits and uses are detailed and pictured in the initial part of this comprehensive catalog. Connection diagrams, various data and dimension tables and application pictures supplement the text. Similar information is given for different kinds of foot switches and for limit switches, tap switches, thermal overload relays and heater coil selection tables. Master index lists page, price group and diagram number for over 400 items. *Furnas Electric Co.*  
... for your copy, circle No. 208

### Reference book for control panel set-ups

Detailed data covering 68 pages is that required by consulting and electrical engineers for designing panels for control of machines and machine tools. Called the Panel Builder's Handbook, it is a ready reference and specification list of controls and accompanying accessories. Arranged in order of simplicity of function, it starts with manual relays and contractors, carries on through electrical interlocks and solenoid operated brakes. Illustrations, diagrams, dimensions, rating and catalog numbers, and ordering information appears for each item listed. *Cutler-Hammer, Inc.*  
... for your copy, circle No. 209



## Manual on pushbuttons, relays, other switches

A variety of switches, starters and solenoids are described and illustrated in this 32-page general purpose control operation and application manual. It explains what each product is, shows how it works and tells where the devices can be applied. Manual magnetic and reduced-voltage starters are included; kinds of switches are limit, pressure and vacuum, float, plugging and anti-plugging. Charts, sketches and photographs supplement the text. *General Electric Co.*  
... for your copy, circle No. 210

## Selection chart for 131 heavy duty switches

How you can increase machine speed and efficiency while reducing breakage, waste and injury are told in this eight-page brochure manual on heavy duty switches for machine tools and other industrial equipment. It gives complete descriptions for all major types of enclosed precision switches, with a total of 131 specific switches listed and charted for easy selection. *Micro Switch, a division of Minneapolis-Honeywell Regulator Co.*  
... for your copy, circle No. 211

## Machine limit switch with nylon roller

Complete isolation of mechanical and electrical compartments, use of nylon parts where metal-to-metal contact would affect wear, and other design features of the Type DM machine limit switch are presented in this four-page manual that gives dimensions, ratings and other details. Sketches show the six styles of mounting plates and the four kinds of operating levers—straight, track, planer and shipper rod type. *Clark Controller Co.*  
... for your copy, circle No. 212

## Selection guide for safety switches

Front-operated industrial switches are featured in this 28-page catalog that includes mounting dimensions and knockout locations for a complete line—Type A, industrial types up to 1,200 amp; double throw switches, and Type D up to 600 amp. Words, pictures, tables and drawings combine to give you all the selection facts you need for ordering and installing these devices. Significant data on the firm's switch simplification plan are presented and products described include the only front-operated safety switches available in raintight (NEMA III) and cast enclosures to meet NEMA specifications III, IV and V. *Federal Pacific Electric Co.*  
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100

## Data on packaged industrial substation structures

Drawings, dimensions and catalog numbers for selection of a package substation, including structure, air switches, lighting arrester and other components, are contained in this 16-page manual. Application for single incoming lines shows structures designed for 1- and 3-phase transformers up to 1,500 kva., and an application for several incoming lines, or through lines, shows three arrangements. Complete details for ordering and selection are included. R & I Equipment Div., I-T-E Circuit Breaker Co.

... for your copy, circle No. 214

## Report on rotary switches for many uses

Control and instrument rotary switches for scores of specific applications are pictured and described in this eight-page manual. It deals with switches for operating ammeters, voltmeters, frequency meters and P. F. meters; for control functions such as synchronizing, temperature indicating and on-off operations, and for controlling electrical equipment such as circuit breakers, transformer tap changers, motor operated rheostats and governor motors. Allis-Chalmers Mfg. Co. ... for your copy, circle No. 215

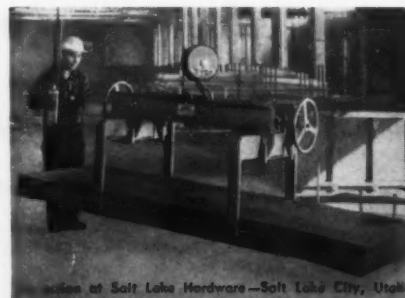
## Selection book for slide switches

Complete specifications on Stackpole miniature slide switches are contained in a 12-page manual picturing over a dozen standard types, plus three special purpose models, printed wiring terminals and terminal shields. A specifications table for at-a-glance selection covers circuit description, ratings, black trigger, mounting holes and dimensions. Also available is Bulletin RC-10B that covers Snap-Switches with outside toggles for indirectly-operated assemblies. Stackpole Carbon Co. ... for your copy, circle No. 216

## Water- and oil-tight heavy duty pilot controls

Design and construction features, ordering data and other information about several kinds of Gold-N-Ring sealtight controls appear in this 14-page catalog. It covers pushbutton units of three head types; pushbutton and selector units; pilot lights; control stations; components and accessories; heavy duty and super-sensitive limit switches and solenoids. A section on panel planning and dimensions includes a layout template and blueprints with dimensions for various components. Electrical Mfg. Div., The National Acme Co.

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### Lever, foot, pushbutton switches and timers

General information on all this firm's products, plus more detailed data bulletins that are available, are all presented in this four-page manual. Covered are six types of frames for lever switches and several of pushbutton, foot and limit switches. Synchronous-motor and electronic timers are also described and pictured. *General Control Co.* . . . for your copy, circle No. 218

### Remotrols and weatherproof control devices

A variety of weatherproof control terminal boxes, utility power outlets and electric time switches are described and pictured in this 12-page guide book. Application and construction data, plus prices, are given for each of the several devices, including utility power outlets with circuit breakers, 30- and 50-amp. rubber cord sets. Available also from the firm is literature on current transformers. *Midwest Electric Products, Inc.* . . . for your copy, circle No. 219

### Push buttons and interchangeable control units

This manual's eight pages present detailed descriptions about applications, make-up and specifications for standard duty, heavy duty, and oilight push buttons and enclosures. Illustrations are included for each of the several models. *The Arrow-Hart & Hege-man Electric Co.* . . . for your copy, circle No. 220

### Trio of miniaturized switch units

Midgits, miniature and surface mounting switch units are explained and pictured in this four-page manual that includes blueprints with dimensions, ratings, temperature ranges and other pertinent data. Helpful hints on application and installation are presented. *Fenwal Inc.* . . . for your copy, circle No. 221

### Contact switches built to specification

A pocket-sized folder giving a survey of this firm's many products and services includes a brief description of facilities for design and manufacture of electrical contact switches. *Douglas Manufacturing Div., Kingston Products Corp.* . . . for your copy, circle No. 222

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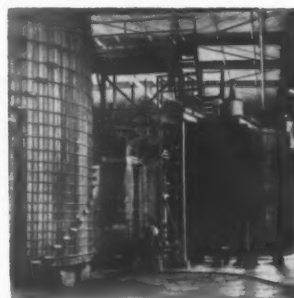
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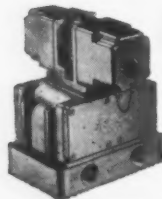
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102

## 72 pages on relays for every control need

Relays and associated controls detailed in this catalog include a complete line, ranging from miniaturized units for precision instrumentation to heavier duty types and those for military and aircraft specifications. There are several series for a-c. and d-c., snap action switches, locking and inter-locking relays and special types, components and assemblies. Sections are devoted to ordering information, coil and contact data, engineering terms and definitions, electrical laws and formulas. *Guardian Electric Manufacturing Co.*

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## All about convenient industrial switch kit

A four-page description of the Licon Switchpak, this folder gives facts on a kit that contains three switches, two accessory actuators and base plates. Used with extra parts, these switches can be modified to form 16 enclosed industrial switch types, providing quick replacement in routine maintenance. *Licon Div., Illinois Tool Works.*

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## Choice of 300 custom solenoids from 20 parts

How it is possible to assemble 300 different custom solenoids from 20 standard parts is explained in this four-page manual about the ingenious design for the series 100 and 300 solenoids. Installation data, specifications, blueprints of mountings, performance curves, and typical coil data give all the information you need for proper, easy selection. *Joseph Pollak Corp.*

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## Up-to-date info for precision switch users

To the user of small precision switches in electronic and related equipment, this four-page bulletin brings recent data on all the latest types of components. It covers five categories: basic switches for controlling and sensing motion and interlocking circuits; manually operated pushbutton, rotary selector, and toggle switches; and cabinet door interlocks. Also available are four data sheets that cover double-duty explosion-proof switches, adjustable mounting bracket for basic switches, impact-actuated (inertia) switch and "pull-to-unlock" toggle switches. *Micro Switch, a division of Minneapolis-Honeywell Regulator Co.*

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### Electromagnetic control catalog in seven parts

A complete catalog, available whole (57-S) or in parts, covers the electromagnetic control field: 57-S1—automatic transfer switches to transfer a load from a normal source to an emergency source upon failure or voltage reduction. 57-S2—remote control switches for accessible control of power and lighting from any number of control stations. 57-S3—magnetically held contactors for unlimited combinations including multi-pole, special contact arrangements and materials, and also for normally open and normally closed load classes. 57-S4—relays, magnetically or mechanically held, in unlimited pole combination and special purpose relays. 57-S5—a.c. and d.c. solenoids. 57-S6—electric plant controls, including complete systems, paralleling changeover and alternating panels, load demand controls, battery chargers and adapter units. *Write on company letterhead, specifying individual or complete catalogs, to Robert C. May, Director of Sales Promotion, 50-56 Hanover Road, Florham Park, N. J.*

### Custom-built electrical control systems

A dozen typical examples of widely-varied control jobs are illustrated in this four-page bulletin that explains the firm's service and products. Paragraphs on automation, crane control and explosion-proof control serve to point out various facets of the firm's custom-built control designs. *Rundel Electric Co.*

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### Controls for everything from A to Z

An index that ranges from air conditioning to zone controls covers over 100 products in the control field with descriptions, charts and other data. Among the series listed are controls for pressure, refrigeration and differential pressure, temperature, limit and fan, relays of several kinds, liquid level and low water, thermostats, oil burner controls, plus magnetic and tilting type switches. *The Mercoid Corp.*

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### Quick guide to GE safety switches

General use and standard duty safety switches, fuse puller switches and circuit breaker load centers are among the products on which this 26-page manual guide-book focuses. Application and selection data with pictorial indices are given for various categories. Several knockout and wiring diagrams, photos, blueprints and tables are combined with ratings, prices and dimensions for all devices. *General Electric Co.*

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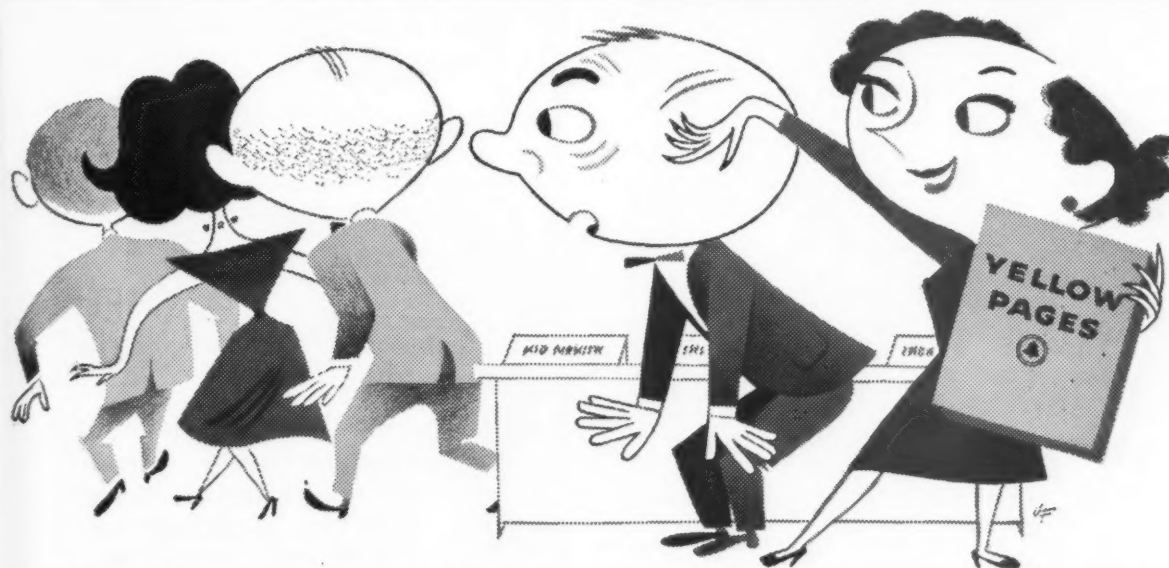
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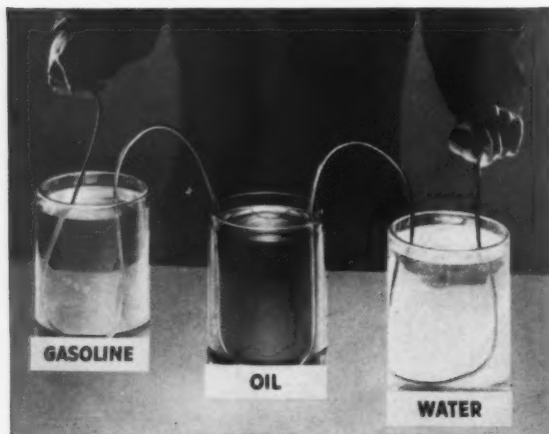
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### 40-page catalog of switches

Connectors, terminals and switches for lighting, instrument panels, ignition, heaters and defrosters, directional signals, windshield wipers, beam controls, etc., are among the scores of items described and pictured in this 40-page catalog. It also features a swaged-on terminal service kit for servicing the firm's system of automotive wiring. For many of the products shown, there is a list of well-known manufacturers that use the electrical devices. *Douglas Manufacturing Div., Kingston Products Corp.*

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### Engineering guide for circuit breaker line

This guide book discusses the application of circuit breakers to diverse control and protective functions, treating application of the hydraulic system, time delay curves, application data and other phases. Its 22 pages contain tables and graphs with voltage drops, coil resistance and impedance values, wattage loss values, standard rated capacities for various types, and a condensed selection guide for standard models and available features. *Heinemann Electric Co.*

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### Switches—push, slide, toggle and rotary

Toggle switches—one, two, three and four pole; single and double pole slide switches; single pole rotary switches, and single and double pole push switches are detailed in this 10-page manual that gives specifications, dimensions and illustrations of all models. Outlets, caps, pilot lights, special lever action double pole switches for sump pumps, etc., as well as accessories, are also detailed. *Carling Electric Co.*

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### Magnetic relay with sectional pole construction

How PM magnetic relays cut panel space, reduce installation and maintenance time, is explained in this eight-page bulletin that includes a complete description, specifications, dimensions and outstanding features of the line. An enlarged photo is labeled to point out 12 construction advantages for the series that has 10 standard models available from stock. The well-illustrated manual gives details on the relay which has individually removable and replaceable poles. *Clark Controller Co.*

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### High voltage starting devices for three motor types

This detailed manual contains data on a complete line of high voltage starting equipment for full and reduced voltage starting and reversing of squirrel cage, synchronous and wound motor types. Construction and design features, performance and ratings of the air-break contractor are given in the book's opening pages. Similar data is presented for other equipment such as starters with air-break switching, synchronous motor starters, induction motor starters and wound rotor motor starters, etc. Three pages are devoted to prices for various modifications and special features that can be applied to high voltage starters. *Allen-Bradley Co.*

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### Basic engineering data on rotary solenoid line

Fundamentals, basic design, special features and facts on determining proper design and wire size for these rotary solenoids are discussed in this manual's 38 pages. Direct current torque charts for seven designs are included as well as illustrations of typical applications, limitations to be considered and facts on circuit selectors and stepping relays. *L. G. Leland, Inc.*

... for your copy, circle No. 235

### Here's a digest of tips on Micro-Switch use

Excerpts of best ideas from Micro Tips, this firm's regular idea exchange publication, are compiled in a 5½ x 8½-in. booklet. It has 16 pages of handy case history hints on how plant engineers, electricians and maintenance men are using precision snap-action switches to reduce costs, save manpower, and make operation more automatic in their plants. *Micro-Switch, a division of Minneapolis-Honeywell Regulator Co.*

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### Four series of standard Snap-Lock limit switches

This manual's 16 pages give facts on four basic series—standard, short travel, neutral position and push lever—all, except the last, adaptable to special enclosures for hazardous location installations and for use with various styles of operating levers. Cutaways, wiring diagrams, blueprints with dimensions, specifications and ordering data are given for all models, levers and replacement parts. Final page gives brief data on five other electrical division products. *Electrical Mfg. Div., The National Acme Co.*

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### Oil-tight and general purpose pushbuttons

This double-indexed, 32-page manual covers three lines of pilot controls—standard duty, heavy duty and oil-tight—with selection information as to duty cycle, electrical load, location and units for which they're required. Tables, blueprints, pictures and schematic diagrams are used throughout to describe various models and components. Some 500 parts and prices are included. *Furnas Electric Co.*  
... for your copy, circle No. 238

### Inside story on safety switches

Distinctive features of the Cutler-Hammer heavy-duty safety switch are described in this fact folder. It details advantages and construction of the duo-strength operating hook, spring pressure type fuse receiver and the quick-change operating unit, plus ten other of the device's important design facets. *Cutler-Hammer, Inc.*  
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### Facts and figures on 30-amp. rotor switch

Two or three pole (plug or cartridge type) 30-amp. rotor switches are the subject of this six-page fold-out publication on the "Little Giant" line. Latest design features are pictured and described, sketches give dimensional data, and catalog facts are included for eight models. *Bulldog Electric Products Co.*  
... for your copy, circle No. 240

### Fact sheet on snap-action Thermoswitch controls

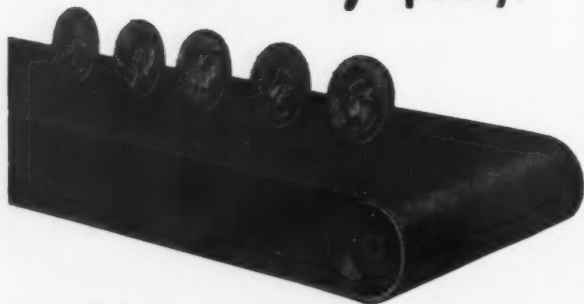
A two-page selection chart that gives data for eight head types is featured in this description of snap-action Thermoswitch controls. There is also general information and paragraphs on installation, application and checking of control systems. *Fenwal Inc.*  
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### Control devices for JIC standards

Application features of GE control devices built to meet Joint Industrial Conference standards are the subject of this 12-page publication that gives product data on the machine tool relay, oil-tight pushbutton, solenoid, limit switch, magnetic starter, plugging switch and pneumatic time-delay relay. *General Electric Co.*  
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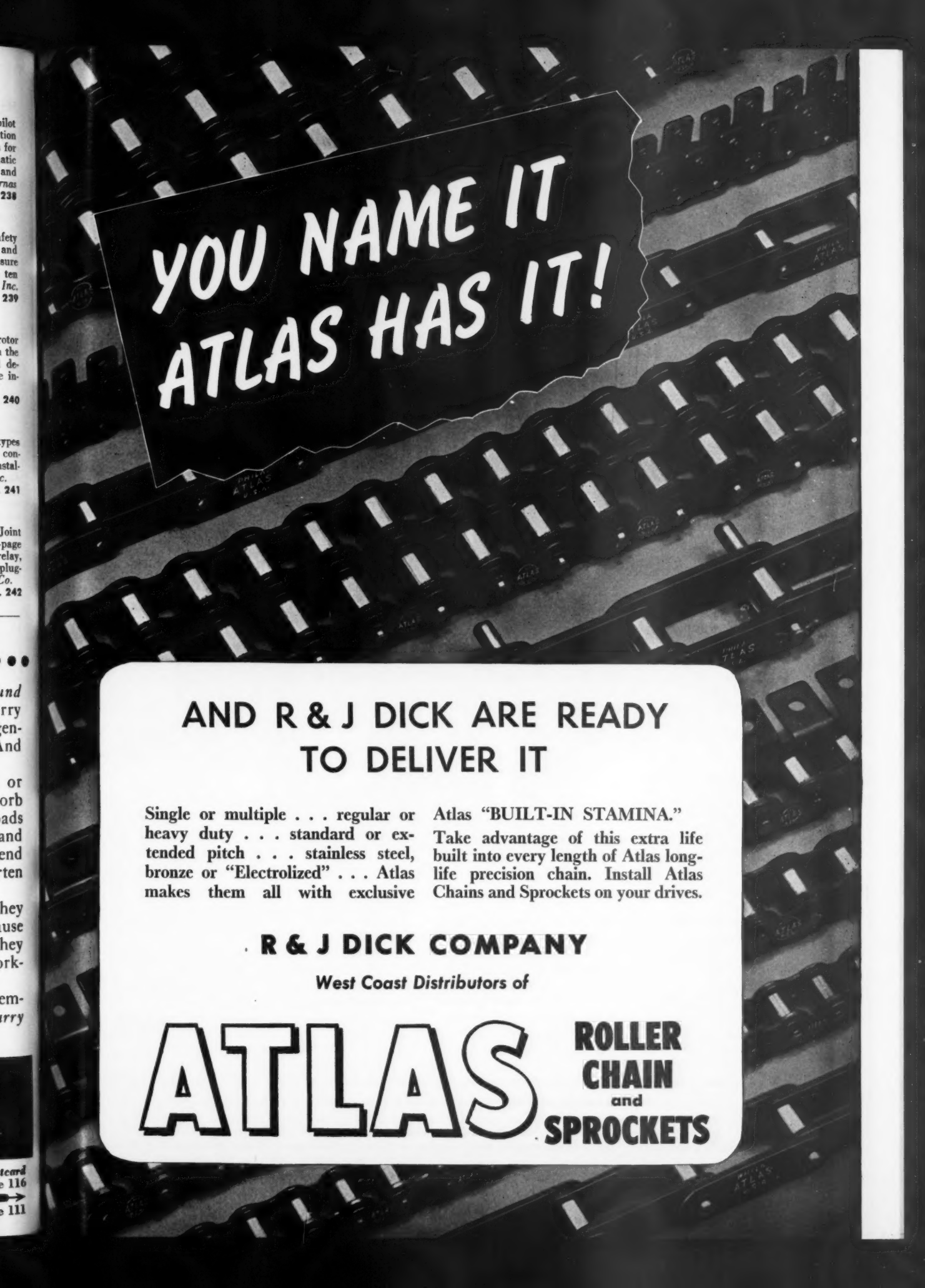
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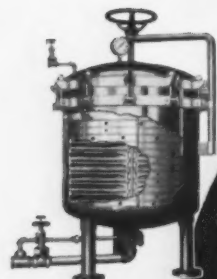
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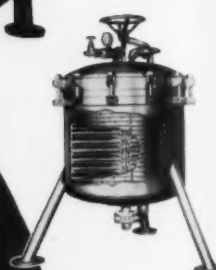
**ROLLER  
CHAIN  
and  
SPROCKETS**



Model MCR retractable tank, heavy duty filter. Capacities 100 sq. ft. to 1000 sq. ft. of filtering surface. No breaking of pipe connection. Quick opening cover. ASME approved.



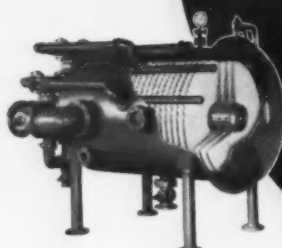
Standard horizontal plate filter. Has positive cake stability under all conditions, even with a complete shut down of filtering.



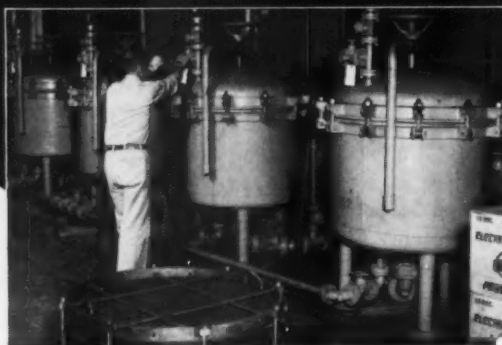
Beer polishing filter. Removes all yeast cells and a large percentage of bacteria. Produces a beer of greater stability and longer shelf life.

# SPARKLER FILTERS

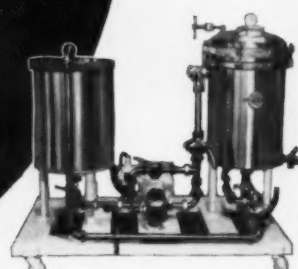
*Filtration Engineering  
for all industrial and  
municipal filtering  
requirements . . .*



Model SCJ heavy duty water filter. Designed for industrial plant water, municipal water supply and swimming pools. Available in capacities up to 5,000,000 gal. per day.



Plating solution filters. Used in the world's largest plating plants.



All stainless steel horizontal plate filter with stainless steel piping valves, and slurry tank. For sanitary operation on food products.

Engineering special adaptations of standard filters to meet particular requirements of a product is a continuous daily occurrence at Sparkler. Whatever your filtering problem may be, Sparkler engineers with over 30 years of experience in solving similar problems, probably will be able to offer a solution without expensive experimentation. Hundreds of special filters have been developed in addition to the modern standard

models to meet the particular requirements of many products such as:

**Chemicals  
Pharmaceuticals  
Sugar refining  
Food products**

**Beer, Whisky, Wine  
Petroleum  
and derivatives  
Electro plating**

and many others in addition to large volume water filtration for municipal and industrial use. Personal service on all filter installations.

West Coast Branch, Sparkler Manufacturing Co., 8479 State Street, South Gate, California. Phone: LOrain 7-0557

Berkley Office, 2729 San Pablo Ave., Berkley 2, Calif. Phone: THornwell 5-7470

Home Office, Mundelein, Ill.

Sparkler International Ltd. Plants in Canada, Holland, Italy, Australia. ★ Service representatives in principal cities throughout the world.

...for more details, circle No. 101 on Reader Service Postcard

**WESTERN INDUSTRY — September 1957**



# INDUSTRIAL POWER EQUIPMENT

## Buyers' Directory

a special service feature for the West's plant operating executives

### HOW TO USE THIS DIRECTORY

For any product to be purchased or serviced, or about which further details are needed, refer to correct manufacturer's listing in "Where to buy in the West" section to obtain name, address and phone number of nearest sales and engineering office.

If you want more information about a certain type of power equipment for your plant, but names of manufacturers are unknown, refer to correct heading in "Classified Products" section for names of all manufacturers of that item who have sales offices in the West.

Manufacturers of industrial power equipment who are not listed in this directory probably do not have Western branch offices or distributors. If you want more information about manufacturers not listed, write: Editor, WESTERN INDUSTRY, 609 Mission St., San Francisco 5, Calif.

### WHERE TO BUY IN THE WEST pp. 109-135

Lists plant power equipment manufacturers in the entire U. S. who have Western sales offices, distributors or representatives (on pages with strip along upper edges). Complete buying information is shown with each manufacturer's listing as follows:

Home office address

Products manufactured

Manufacturer's branch offices in the West, their addresses and telephone numbers

Distributors and representatives in the West, their addresses and telephone numbers

### CLASSIFIED PRODUCTS . . . . pages 136-140

Contains names of manufacturers cross-referenced under 84 categories of industrial power products (see pages with strip along lower edge).

**ACME CHAIN CORP.**, 812 Main St., Holyoke, Mass.

Chains for drives (detachable link, roller, silent transmission).

See advertisement on page 74

#### Representatives

Ariz., Phoenix—Garrett Supply Co., 130 W. Madison St. AL 8-5701  
Ariz., Phoenix—Tractor Parts & Equipment Co., 2906 W. McDowell St.  
Calif., Berkeley—Berkeley Industrial Supply, 1003 Pardee St.  
Calif., Los Angeles—Western Belting & Mechanicals, Inc., 3525 E. Emery St.  
Calif., Oakland—Edward L. Parsons, 600 Sixteenth St. TW 3-1877  
Calif., Pacific Palisades—James P. McConkey, P.O. Box 226, GL 4-4989  
Ore., Portland—Berg Evans Chain Co., 240 S.W. First Ave.  
Wash., Seattle—Berg Evans Transmission Co., 61 Sixth Ave. So.

**ADEL PRECISION PRODUCTS, DIV. GENERAL METALS CORP.**, 10777 Vanowen St., Burbank, Calif. ST 7-2611

Power gear pumps, Manual and solenoid operated directional control valves, Pilot control valves, Volume controls, Check valves, By-pass valves.

#### Representatives

Ariz., Phoenix—Air-Draulics Co., 31 So. 3rd Ave.  
Calif., Glendale—Haskel Engineering & Supply Co., 1236 So. Central Ave.

Calif., San Francisco—Haskel Engineering & Supply Co., 225 11th St.  
Ore., Portland—Russ Chamberlin Co., 234 S.E. 12th Ave.  
Wash., Seattle—Haskel Engineering & Supply Co., 6618 48th Ave. N.E.

**ADVANCE GEAR & MACHINE CORP.**, 5851 Holmes Ave., Los Angeles 1, Calif.

Clutches, increasers (speed), Reducers, speed (bevel gear, helical gear, planetary gear, shaft mounted, spur gear, worm gear)—all designed and manufactured to customers' drawings or specifications only. Gears (bevel, helical, spur, etc), Gears (worm), Sprockets.

**AEROQUIP CORP.**, 3015 Winona Ave., Burbank, Calif.

Couplings (self-sealing), Hose and Fittings for power and conduit applications.

#### Branch Offices

Calif., Berkeley—920 Grayson St. AS 3-3643  
Colo., Denver—P.O. Box 125, Capitol Hill Sta. SP 7-2618

#### Representatives

Alaska, Anchorage—B & C Auto Electric, 443 E. 4th Ave. Phone 2-6601  
Alaska, Fairbanks—B & C Auto Electric, 509 Gaffney Rd. Phone 2266  
Hawaii, Honolulu—Charles W. Carter Co., 825 Keeaumoku St.  
Hawaii, Honolulu—Arthur H. deRoche Co., 612 Sheridan St.  
Ore., Portland—Sparks-Aeroquip Northwest, 1624 S.E. Grand Ave. BE 4-4186

**AETNA BALL & ROLLER BEARING CO. DIV., PARKERSBURG-AETNA**

**CORP.**, 4600 W. Schubert Ave., Chicago, Ill.

Standard and special thrust bearings, Special radial roller bearings and precision parts.

#### Branch Offices

Calif., Los Angeles—1706 So. Grand Ave. RI 9-8114  
Calif., San Francisco—458 Brannan St. SU 1-0972  
Ore., Portland—212 N.W. 14th Ave. CA 7-0673  
Wash., Seattle—2379 Fourth Ave. So. MU 3232  
*Representatives*  
Calif., Los Angeles—Harold R. Swanton, Inc., 1706 So. Grand St. RI 9-8114  
Calif., San Diego—Harold R. Swanton, Inc., 256 Seventh Ave. BE 4-6439  
Calif., San Francisco—Harold R. Swanton, Inc., 458 Brannan St. SU 1-0972  
Ore., Portland—Harold R. Swanton, Inc., 212 N.W. 14th St. CA 7-0573  
Wash., Seattle—Harold R. Swanton, Inc., 2739 Fourth Ave. MU 3232  
Wash., Spokane—Harold R. Swanton, Inc., So. 9 Pine St. RI 7-7193

**AHLBERG BEARING CO.**, 3025 W. 47th St., Chicago 32, Ill.

Bearings (ball), Pillow blocks.

#### Representatives

Calif., Los Angeles—Latham Sales Co. Div., Bearing Sales Co., 2000 So. Olive St. RI 8-0175  
Ore., Portland—Northwest Industrial Sales Co., 222 N.W. Tenth Ave.

**AIRMATIC VALVE, INC.**, 7313 Associate Ave., Cleveland 9, Ohio

Cylinders (air, hydraulic), Valves (air power line, hydraulic power line), Regulators (pressure).

#### Representatives

Calif., Arcata—Munnell & Sherrill, Inc., 1041 F St. VA 2-1761, -2, -3

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## AJAX-ARMSTRONG

Calif., Eureka—Munnell & Sherrill, Inc., 2423 18th St. HI 2-0520  
 Calif., Glendale—Valley Engineers, P. O. Box 585, CH 5-3510  
 Calif., Oakland—Otrich Co., Grand Ave. at Weldon. TE 2-3781  
 Calif., San Diego—General Industrial Supply Co., 1115 F St. BE 4-6767  
 Calif., Ukiah—Munnell & Sherrill, Inc., Rt. 1, Box 559-H, No. Hwy. 101. HO 2-3490, -7272  
 Ore., Eugene—Munnell & Sherrill, Inc., 1620 W. Seventh Ave. DI 5-8792  
 Ore., Portland—Munnell & Sherrill, Inc., 1163 N.E. 63rd St. AT 1-0021  
 Ore., Roseburg—Munnell & Sherrill, Inc., 1958 So. Stephens. OR 3-3508  
 Wash., Seattle—Standard Equipment Sales, 1731 First Ave. So. SE 1955

### AJAX FLEXIBLE COUPLING CO., INC., Portage and English Sts., Westfield, N. Y.

Couplings (flexible, shaft) for power transmission purposes.

#### Representatives

Calif., Los Angeles—A. W. Nash Co., 2112 So. Atlantic Blvd. AN 9-7304  
 Calif., San Francisco—Sampson Sales Co., 420 Market St. EX 2-7070  
 Wash., Seattle—Stephen Thurlow Co., Room 203, 1731 First Ave. So. MU 5488

### ALECTRIC MFG. CO., 7842 39th Ave., Kenosha, Wis.

Thyatron tube tester and analyzer

#### Representative

Ore., Portland—Donal Co., P. O. Box 7013. CA 2-4343

### ALKON PRODUCTS CORP., 200 Central Ave., Hawthorne, N. J.

Pneumatic-hydraulic valves and cylinders, drill heads.

#### Representatives

Calif., Los Angeles—Numatics, Inc., 10645 Wixom St. ST 7-0114  
 Calif., San Francisco—E. D. Sweetland, 151 Mission St. GA 1-2662  
 Ore., Portland—Hydraulic & Air, Inc., P. O. Box 9513. CA 2-3295  
 Wash., Seattle—Chain Gear, Inc., 822 First Ave. So. MA 7000

### ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis.

Automatic switches, Control centers, Electric control equipment, Electric motor controls, Electric switches.

#### Representatives

Ariz., Phoenix—Edward P. Weller & Co., 1902 E. Rovey Ave. AM 6-3188  
 Calif., Los Angeles—H. D. Easterbrook, 1264 So. Boyle Ave. AN 9-9421  
 Calif., San Diego—James A. Setchell Co., Inc., 301 W. G St. BE 3-3981  
 Calif., San Francisco—Campbell & George Co., 1601 Cortland Ave. MI 8-1236  
 Colo., Denver—Young Electric & Mfg. Co., 2134 Curtis St. AC 2-4841  
 N. Mex., Albuquerque—A & A Supply Co., 114 Morningside Dr. N.E. Phone 6-0307  
 Ore., Portland—J. A. Tudor & Associates, Inc., 1004 S.E. Belmont St. BE 2-1188  
 Utah, Salt Lake City—Stevens Sales Co., 1482 Major St. IN 7-5489  
 Wash., Seattle—J. A. Tudor & Associates, Inc., 2605 Western Ave. SE 5520

### ALLIS-CHALMERS MFG. CO., Milwaukee 1, Wis.

Air compressors (stationary), Bases (motor), Belts, V (rubber), Circuit breakers, Control centers, Controls (electric, electric motor), Engines, Gearmotors, Generators (electric), Motors (electric, DC, electric, poly-phase, AC), Pulleys, Rectifiers, Sheaves, Substations (unit), Switchgear equipment, Transformers, Transmission, variable speed.

#### Branch Offices

Ariz., Phoenix—3300 No. Central Ave.,  
 Calif., Los Angeles—417 So. Hill St.  
 Calif., San Diego—747 Ninth Ave.  
 Calif., San Francisco—650 Harrison St.  
 Colo., Denver—855 Broadway Bldg.  
 Mont., Butte—811 Hibour Bldg.  
 N. Mex., Albuquerque—323 Third St. S.W.  
 Ore., Portland—520 S.W. 6th Ave.  
 Utah, Salt Lake City—136 So. Main St.  
 Wash., Seattle—1318 4th Ave.  
 Wash., Spokane—West 422 Riverside Ave.

ALLIS, LOUIS, see LOUIS ALLIS CO.

### AMERICAN BRAKE SHOE CO., KELLOGG DIV., 97 Humboldt St., Rochester 9, N. Y.

Air compressors (portable, stationary).

#### Branch Offices

Calif., Los Angeles—1349 W. Washington Blvd., RI 9-7871  
 Colo., Denver—4800 York St. CH 4-0472  
 Calif., Oakland—Shields-Harper & Co., 5107 Broadway. OL 3-9119  
 Colo., Denver—Eaton Metal Products, 4800 York St.  
 Mont., Havre—Motor Parts Warehouse, W. First St.

### AMERICAN FLEXIBLE COUPLING DIV., ZURN INDUSTRIES, INC., 1965 Pittsburgh Ave., Erie, Pa.

Clutches (Synchrogear — for marine propulsion drives), Couplings (gear type, flexible).

#### Representatives

Calif., Huntington Park—N. O. D'Arcy Co., 7535 Marbriar St. LU 2-5316  
 Calif., Los Angeles—Mark-Costello Co., 6511 Whittier Blvd. RA 3-4696  
 Calif., San Francisco—Charles A. Fowler Co., 979 Bryant St. UN 3-5010  
 Calif., San Francisco—F. Somers Peterson Co., 157 13th St. MA 1-2255  
 Ore., Portland—Bearing Sales & Service, Inc., 1645 N.W. Hoyt St. CA 3-6301  
 Wash., Seattle—Bearing Sales & Service, Inc., 2908 Sixth Ave. So. MU 0331

### AMERICAN MACHINE & FOUNDRY CO., see LELAND ELECTRIC CO., DIV.

### AMERICAN MACHINE & METALS INC., see UNITED STATES GAUGE DIV.

### AMERICAN METAL HOSE DIV., AMERICAN BRASS CO., 698 So. Main St., Waterbury 20, Conn.

Conduits and fittings (electric), Ducts (bus and wiring), Hose (air, flexible metallic, hydraulic).

#### Branch Office

Calif., Paramount—14900 Garfield Ave. NE 6-0321. ME 0-5811

#### Representatives

Calif., Los Angeles—F. Somers Peterson, 1501 Maple Ave.  
 Calif., San Francisco—F. Somers Peterson, 157 13th St.

### AMERICAN PULLEY CO., 4200 Wissahickon Ave., Philadelphia 29, Pa.

Bases (motor), Belting, drive (rubber), Collars (shaft), Pulleys (conveyor, flat belt), Reducers, speed (shaft mounted), Sheaves (adjustable diameter), Transmission, variable speed.

#### Branch Offices

Calif., Los Angeles—1238 So. Atlantic Blvd. AN 8-6061  
 Calif., Oakland—900 51st Ave. AN 1-9681, -82  
 Wash., Seattle—911 Western Ave. MU 0117

#### Representatives

(Represented by distributors in principal cities)

### AMERICAN RECTIFIER CORP., 95 Lafayette St., New York 13, N. Y. WO 6-3350

Selenium, silicon and germanium rectifiers (Selenium), Magnetic amplifiers, Electric brakes for a-c. motors (Selenium).

#### Representative

Colo., Denver—Hubert Kaub Co., 1025 Santa Fe Dr. MA 3-4606

### AMERICAN RUBBER MFG. CO., THE, 1145 Park Ave., Oakland 8, Calif.

Belting, drive (rubber), Hose (air, hydraulic).

#### Branch Offices

Calif., Los Angeles—2216 So. Hill St. RI 7-0689  
 Ore., Portland—Dekum Bldg. CA 2-1708  
 Utah, Midvale—136 E. 72nd South. AM 5-2765  
 Wash., Seattle—Smith Tower. SE 1727

#### Representatives

Calif., San Diego—Gould Hardware & Machinery Co., 2212 Main St.  
 Ore., Medford—Cal-Ore Machinery Co., Inc., 944 So. Central Ave. Phone 3-4607  
 Ore., Portland—A. W. Davis Supply Co., 2361 N.W. York St.  
 Wash., Seattle—Pacific Marine Supply Co., 1223 Western Ave.

### AMERICAN STOCK GEAR DIV., PERFECTION GEAR CO., 152nd St. & Vicennes, Harvey, Ill.

Gears (bevel, helical, spur, etc.), Gears (worm), Reducers, speed (worm gear), Sprockets.

#### Representatives

Calif., Los Angeles—Marwood, Ltd., 320 E. 3rd. MU 3241  
 Calif., San Francisco—Marwood, Ltd., 357 9th St. HE 1-7893  
 Ore., Portland—Marwood, Ltd., 209 S.W. 1st Ave. BE 5123  
 Wash., Seattle—Marwood, Ltd., 1714 1st St. EL 4747

### AMPCO METAL, INC., 1756 So. 38th St., Milwaukee 46, Wis.

Copper-base alloys to resist hard wear and corrosion.

See advertisement on page 93

#### West Coast Plant

Calif., Burbank—30 E. Burbank Blvd. TH 8-5504, VI 9-2391

#### Representatives

Colo., Longmont—Slack-Horner Brass Mfg. Co., P.O. Box 838 (License Foundry)  
 Wash., Seattle—Alaskan Copper & Brass Co., 3223 Sixth Ave. So. (raw materials)

### AMPLEX DIV., CHRYSLER CORP., P.O. Box 2718, Detroit 31, Mich.

Bearings (flange, self-lubricating, sleeve, thrust), Cores (self-lubricating), Filters (permanent metal), Finished machine parts, Gears, Pulleys, Sprockets, Stock (bar, plate, sheet and strip).

#### Representatives

Calif., Huntington Park—Kingwell Bros., Ltd., 2618 E. 53rd St. LU 2-7427  
 Calif., San Francisco—Kingwell Bros., Ltd., 457 Minna St., P.O. Box 708. SU 1-0514

### ANACONDA WIRE & CABLE CO., 25 Broadway, New York 4, N. Y.

Wire and cable (electric).

See advertisement on page 104

#### Branch Offices

Calif., Los Angeles—807 Architects Bldg. MA 6-2371  
 Calif., San Francisco—120 Montgomery St. YU 6-0051, -52, -53  
 Colo., Denver—909 Seventeenth St. AC 2-0616  
 Wash., Seattle—954 Stuart Bldg. EL 4686, -7, -8

### ANKER-HOLTH DIV., WELLMAN ENGINEERING CO., 2723 Connor St., Port Huron, Mich.

Cylinders (air, hydraulic).

#### Representatives

Calif., Glendale—Haskel Engineering & Supply, 1236 So. Central Ave. CI 4-8148  
 Calif., San Francisco—Haskel Engineering & Supply, 225 11th St. UN 3-1489  
 Ore., Portland—W. G. Ballantyne Co., 103 S.W. Front St. CA 8-4311  
 Wash., Seattle—R. E. Kunz Co., 1016 First Ave. So. EL 4949

### APPLETON ELECTRIC CO., 1701 Wellington Ave., Chicago 13, Ill.

Circuit breakers, Electric conduits and fittings.

#### Branch Offices

Calif., Los Angeles—100 No. Santa Fe Ave. MA 5-7711  
 Calif., San Diego—301 W. "G" St. BE 4-1222  
 Calif., San Francisco—655 Minna St. MA 1-1584  
 Colo., Denver—FR 8-8865  
 Tex., El Paso—8323 Mt. Latona Dr. (So. New Mex.) SK 5-4561  
 Ore., Portland—CA 3-7500  
 Wash., Seattle—1033 6th Ave. MA 5740

### ARMSTRONG MACHINE WORKS, 816 Maple St., Three Rivers, Mich.

Steam traps.

#### Representatives

Ariz., Phoenix—John W. Ladlow, P. O. Box 1784. BR 6-2371  
 Calif., Los Angeles—Guy L. Warden & Sons, 209 W. 12th St. RI 7-0541  
 Calif., San Francisco—Refrigerating & Power Specialties Co., 380 Brannan St. EX 2-4080



Colo., Denver—Hendrie & Bolthoff Manufacturing Co., 1635 17th St. KE 4111  
Ore., Portland—Forsyth-Constant Co., 921 S.W. Oak St. CA 8-6543  
Utah, Salt Lake City—Pace-Turpin Co., 726 So. Third W. St. DA 2-5595  
Wash., Seattle—Arthur Forsyth Co., 2800 15th Ave. AL 5717  
Wash., Spokane—Arthur Forsyth Co., N. 120 Division St. MA 2933

## ARO EQUIPMENT CORP., THE, Bryan, Ohio

Air-operated power motors (rotary-vane type), Air-line couplers and connectors.

**Branch Offices**  
Calif., Los Angeles—Aro Equip. of Calif., 3141 So. Grand Ave. RI 7-7531  
Calif., San Francisco—Aro Equip. of Calif., 265 11th St. HE 1-6246

## ATKOMATIC VALVE CO., INC., 545 W. Abbott St., Indianapolis 25, Ind.

Solenoid (electrically operated) valves.

**Representatives**  
Calif., Los Angeles—Brenner-Fiedler & Associates, 661 No. Spaulding Ave. WE 3-3811  
Calif., San Francisco—Herman E. Held, 147 Tenth St. UN 3-4250  
Wash., Seattle—Fred G. Greaves Co., 418 Eighth Ave. No. EL 0680

## ATLAS CHAIN & MFG. CO., P. O. Box 708, West Pittston, Pa.

Couplings, Roller chain, Sprockets.

See advertisement on page 107

**Representatives**  
Calif., Los Angeles (Maywood)—R. & J. Dick Co., 5276 Atlantic Blvd. LO 8-4014  
Calif., San Francisco—R. & J. Dick Co., 510 Bryant St. SU 1-1341  
Tex., Dallas—R. C. Brown Co., 5523 Dyer St. EM 7137 (for N. Mex.)  
Wash., Seattle—R. & J. Dick Co., 307 Maritime Bldg. MU 1922

## ATLAS COPCO PACIFIC, INC., 930 Brittan Ave., San Carlos, Calif.

Compressors, Pumps, Rock drills, Tools (air), Engines (Deutz air cooled diesel), Hoses (air).

See advertisement on page 172

**Branch Offices**  
Ariz., Phoenix—1326 N. 22nd Ave. AL 2-2022  
Colo., Denver—2360 So. Delaware PE 3-2926  
Utah, Salt Lake City—1065 So. Second W. EM 4-2315  
Wash., Spokane—1509 W. Second St. TE 8-1531

**Representatives**  
(Distributors of Atlas Copco Deutz diesel engines only.)

Ariz., Phoenix—Pasco Machine Shop, Inc., 733 No. 19th Ave. AL 4-7371  
Idn., Boise—Magneto Diesel Supply, 2406 Main Ore., Portland—Edward L. Kropp Co., 1405 S.E. Eighth Ave. BE 2-6738  
Utah, Salt Lake City—L. A. Jones Co., 1145 Richards. EL 5-8392

## AUTOMATIC STEEL PRODUCTS, see MERCURY CLUTCH DIV.

## AUTOMATIC SWITCH CO., Florham Park, N. J.

Controls (electromagnetic), Solenoids, Switches (automatic, electric), Valves (air power line, hydraulic power line).

**Branch Office**  
Calif., Los Angeles—1233 Goodrich Blvd. RA 3-3669

**Representatives**  
Calif., Huntington Park—Valvate Associates, 7814 State St. LU 3-1263  
Calif., Los Angeles—Hydraulic Equipment Co., 5924 E. Olympic Blvd. RA 3-1139  
Calif., San Francisco—Paul S. Everley Co., 550 Ninth St. HE 1-2295  
Calif., San Francisco—Leighton-Stone Corp., 770 Folsom St.  
Calif., San Francisco—Tercio Equipment Co., 939 Howard St.  
Colo., Denver—Clyde P. Elliott, 661 Delaware St. AL 5-7988  
Colo., Denver—Hendrie & Bolthoff Co., 1635 17th St. KE 4-4111  
N. Mex., Albuquerque—Joe E. Pearce & Associates, P. O. Box 796 (Switches)  
N. Mex., Albuquerque—Steel & Engineering Products Co., 1609 Second St. (Valves)  
Ore., Portland—Harris Supply Co., 524 N.W. 14th Ave. AT 4119-4110

Ore., Portland—Western Machinery Co., 1035 S.E. Ninth Ave.  
Utah, Salt Lake City—Control Equipment Co., 323 W. 14th St.  
Wash., Seattle—Standard Electric Sales, 1731 1st Ave. So. SE 1955  
Wash., Seattle—Steam Supply & Rubber Co., 123 Jackson St. MA 6556

## BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y.

Boilers and boiler equipment, Burners (oil, gas), Pulverizers (coal), Refractories, Stokers (jet ignition), Tubing (carbon, stainless steel), Welding fittings.

**Representatives**  
Ariz., Phoenix—C. C. Moore & Co., Luhrs Bldg. AL 2-8391  
Calif., Los Angeles—C. C. Moore & Co., 1111 Wilshire Blvd. MA 6-6851  
Calif., San Francisco—C. C. Moore & Co., 450 Mission St. GA 1-3484  
Colo., Denver—Stearns-Roger Mfg. Co., 660 Bannock St. AC 2-8484  
Ore., Portland—C. C. Moore & Co., Failing Bldg. CA 8-9884  
Utah, Salt Lake City—Stearns-Roger Mfg. Co., 40 Richards St. DA 2-5891  
Wash., Seattle—C. C. Moore & Co., Smith Tower. MA 1496

## BAILEY METER CO., 1050 Ivanhoe Rd., Cleveland 10, Ohio

Measurement and/or control of combustion, conductivity, draft, flow, liquid level, pressure, pH, speed, smoke density, temperature and vacuum.

**Branch Offices**  
Calif., Los Angeles—816 S. Atlantic Blvd. CU 3-1187  
Calif., San Francisco—424 Sharon Bldg. SU 1-0926  
Colo., Denver—1506 Kearney St. EA 2-7745  
Wash., Seattle—200 Broadway. SE 7192

## BALDOR ELECTRIC CO., 4353 Duncan Ave., St. Louis 10, Mo.

Motors (electric, DC; poly-phase and single-phase AC).

**Representatives**  
Calif., Los Angeles—Roland S. Boreham Co., 1206 So. Maple. RI 9-3922  
Calif., Oakland—Edward L. Parsons Co., 600 16th St. TW 3-1877  
Ore., Portland—Howard C. Miller, 4550 N.E. Alberta. TU 3700

## BARBER-COLMAN CO., 1300 Rock St., Rockford, Ill.

Barcol overdoors, Door operators, Radio controls.

**Branch Offices**  
Calif., Pasadena—191 E. Glenarm. RY 1-2811  
Calif., San Diego—2311 Kettwar Blvd. RE 2-1272  
Ore., Portland—1210 S.E. Seventh Ave. BE 4-9254

**Representatives**  
Ariz., Phoenix—E. B. Bomar, 914 W. Madison St. AL 4-2726  
Calif., Redwood City—Jerry Deere, 1809 Virginia Ave. EM 8-8927  
Calif., San Francisco—G. J. Yames, 667 Howard St. YU 6-5031  
Colo., Denver—Automatic Control Equipment Co., 5750 Pecos St. GE 3-6436  
N. Mex., Albuquerque—Control & Equipment Co., 5206 Constitution Ave. Phone 6-0753  
Utah, Salt Lake City—Paul E. Benton Co., 1795 So. State St. HU 5-3423  
Wash., Seattle—Merroll W. Musgrave & Co., 2019 Third Ave. EL 4425  
Wash., Spokane—Merroll W. Musgrave & Co., 215 Hutton Bldg. TE 1481

## BARKSDALE VALVES, 5125 Alcoa Ave., Los Angeles 58, Calif. LU 7-6181

Controls (compressed air, hydraulic), Valves (air power line, hydraulic power line).

**Branch Office**  
Calif., South San Francisco—P. O. Box 266. JU 3-0162

**Representatives**  
Ariz., Phoenix—Cone & Wallace Co., 650 W. Vermont Ave. CR 4-1600  
Colo., Denver—Industrial Materials, 2855 Walnut St. AC 2-0891  
Ore., Portland—Russ Chamberlin Co., 234 S.E. 12th St. EA 7125  
Utah, Salt Lake City—Robert Taylor & Sons, 1077 So. Main St. Phone 22-5525  
Wash., Seattle—D. L. Snellman Co., 113 King St. EL 8260

## BECKMAN, ARNOLD O., INC., 1020 Mission St., South Pasadena, Calif. RY 1-1161

Oxygen and thermal conductivity analyzers for flue gas analysis—panel mounted and portable units.

## BE-GE MFG. CO., P. O. Box 67, Gilroy, Calif. VI 2-2134

Controls (hydraulic), Cylinders (hydraulic), Pumps (hydraulic power), Valves (hydraulic power line).

**Representatives**  
Calif., Stockton—Towner-Meyer Co., 2010 E. Fremont St.  
Ore., Portland—Russ Chamberlin Co., 234 S.E. 12th Ave.  
Wash., Spokane—Calkins Mfg. Co., No. 1102 Atlantic St.

## BELLOWS CO. OF CALIFORNIA, THE, 926 Western Ave., Glendale, Calif. CH 5-6911

Controlled-air-power devices (machine tool accessories), Air compressors (portable, stationary), Controls (compressed air, electric, electric motor, hydraulic), Cylinders (air, hydraulic), Fittings and Couplings (air, hydraulic), Hoses (air), Motors (air, electric d-c., electric poly-phase a-c.), Regulators (pressure), Switches (automatic, electric), Transformers, Valves (air power line).

**Branch Offices**  
Ariz., Phoenix—3121 E. McDowell Rd. BR 5-2011  
Calif., San Diego—3694 Kettner Blvd. CY 8-7223  
Calif., San Mateo—126 W. 25th Ave. FI 5-7812  
Colo., Denver—1305 E. Ivanhoe Way. SK 6-1057  
Ore., Portland—1316 S.E. Seventh. BE 6-0890  
Utah, Salt Lake City—559 So. Third W. EM 4-8417  
Wash., Seattle—2 Hanford St. MU 1652

## BIMBA HARDWARE & MFG. CO., 101 Main St., Monee, Ill.

Stainless steel "throw-away" single and double acting air cylinders.

**Representatives**  
Calif., Los Angeles—Huddleston Equipment Co., 1148 So. Los Angeles St.  
Calif., Los Angeles—Schumann Equipment Co., 5392 Alhambra Ave.

## BINKS MANUFACTURING CO., 3114-44 W. Carroll Ave., Chicago 12, Ill.

Air compressors, Hoses (air), Motors (air), Regulators (pressure).

**Branch Offices**  
Calif., Los Angeles—4915 Pacific Blvd. LU 1-0136  
Calif., San Francisco—950 Newhall St. AT 2-4985  
Wash., Seattle—514 Denny Way. EL 1350

**Representatives**  
Colo., Denver—R. O. Day, 23 So. Depew Dr. BE 3-5284  
Utah, Salt Lake City—Generator Supply Co., 867 So. 2nd E. EM 4-7723

## BLAW-KNOX CO., see COPES-VULCAN DIV.

## BODINE ELECTRIC CO., 2254 W. Ohio St., Chicago 12, Ill.

Reducer and non-reducer electric fractional hp. motors, 1/2000 to 1/6 hp. Over 3500 standard motors in all types and sizes.

**Representatives**  
Calif., Los Angeles—Andrews Hardware & Metal Co., 336 So. Main St. MU 6111  
Calif., Los Angeles—H. M. Hall and C. E. Mello, 406 So. Main St. MA 6-9159  
Calif., Los Angeles—Minarik Electric Co., 224 E. 3rd St. MI 3161  
Calif., San Francisco—J. F. Cady, 1485 Bayshore Blvd. JU 5-4108

## BOILER ENGINEERING & SUPPLY, see CONTINENTAL AUTOMATIC BOILERS

## BOND CO., CHARLES, 617 Arch St., Philadelphia 6, Pa.

Couplings, Speed reducers, Sprockets, Stock gears.

**Branch Office**  
Calif., Los Angeles—1044 W. 75th St.  
**Distributors**  
Calif., El Centro—Winn Supply Co., 254 E. Main  
Calif., Long Beach—Bay City Bearing Co., 709 W. 16th St.  
Calif., Los Angeles—Associated Gear & Machine Co., 829 Santa Fe Ave.  
Calif., Maywood—Bay City Bearing Co., 5275 Atlantic Blvd.

## BOSTON GEAR-CHAIN BELT

Calif., Sacramento—Capital Machine & Welding Works, 83 No. 17th St.  
Calif., San Diego—Winn Supply Co., 256 Seventh Ave.  
Calif., San Francisco—A. J. Glesener Co., 975 Bryant St.  
Calif., San Francisco—Renstrom Gear & Machine Works, 514 Bryant St.  
Calif., Stockton—Geiger Iron Works, Inc., Scotts Ave. and Pilgrim St.  
Wash., Seattle—Chain Gear, Inc., 820-24 First Ave. So.

### BOSTON GEAR WORKS, Quincy 71, Mass.

Bearings (ball), Chains for drives (roller), Collars (shaft), Couplings (shaft), Gearmotors, Gears (bevel, helical, spur, etc.), Gears (worm), Hangers (shaft), Pillow blocks, Pulleys, Reducers, speed (helical gear, worm gear), Sprockets, Transmission, variable speed.

See advertisement on second cover

#### Branch Offices

Calif., Los Angeles—1515 N. Kenwood Ave. TH 2-4492  
Calif., Oakland—4770 San Pablo Ave. OL 4-4687  
Wash., Seattle—1025 84th St. N.E. GI 8521  
**Representatives**  
Calif., Los Angeles—Andrews Hardware & Metal Co., 334 So. Main St. MA 9-5080  
Calif., Los Angeles—Garrett Supply Co., 3844 So. Santa Fe Ave. LU 8-7221  
Calif., San Francisco—C. W. Marwedel, 1235 Mission St. UN 1-2125  
Calif., San Leandro—Republic Supply Co. of Calif., 1919 Williams St. LO 2-0414 and EN 1-1060  
Colo., Denver—Western Belting Co., 1720 Wazee St.  
Ore., Portland—J. E. Hazeltine & Co., 115 S.W. Second Ave.  
Utah, Salt Lake City—Industrial Supply Co., Inc., 121 Social Hall Ave.  
Wash., Seattle—Cragin & Co., 982 First Ave. So.  
Wash., Spokane—J. E. Hazeltine & Co., No. 1101 Division St.

### BRAMMER CORP., 684 Broadway, New York 12, N. Y.

"V" link belting, "V" adjustable belting.

#### Representatives

Ariz., Phoenix—Garrett Supply Co., 126 W. Madison St.  
Calif., Los Angeles—Garrett Supply Co., 3844 Santa Fe Ave.  
Calif., Los Angeles—Marshall Tool & Supply Co., 2850 E. Olympic Blvd.  
Calif., Pacific Palisades—James P. McConkey, P. O. Box 226

### BROWN BOVERI CORP., 19 Rector St., New York 6, N. Y.

Steam turbine generators, Turbo blower and axial compressors, Gas turbines, Power circuit breakers, Mechanical rectifiers, Generator voltage regulators, Stop motors.

#### Representatives

Ariz., Tucson—Central Station Equipment Co., 2223 Aviation Hwy. Phone 3-2493  
Calif., Pasadena—A. B. Smedley, P. O. Box 67-C, SY 8-3919  
Calif., San Francisco—Belliove Co., 420 Market. YU 2-3713  
Colo., Denver—Slagbaugh-Thompson Co., 100 W. 13th Ave. AC 2-5826

### BROWN, DAVID, INC., 999 Beecher St., San Leandro, Calif. LO 9-7525

Couplings, Gearmotors, Gears, Speed reducers.

See advertisement on page 76

#### Branch Office

Calif., Los Angeles (Maywood)—6025 Atlantic Blvd. LU 1-6661

#### Representatives

Ore., Portland—Zidell Machinery & Supply Co., 3121 S.W. Moody St. CA 8-8691  
Wash., Seattle—Cascade Machinery Co., 4600 E. Marginal Way. RA 6-8500

### BROWN INSTRUMENT DIV., see MINNEAPOLIS-HONEYWELL CO. BRUNING CO., THE, 601 So. 9th St., Lincoln 1, Neb.

Cylinders (air, hydraulic), Fittings and couplings (air, hydraulic), Nozz (hydraulic).

#### Branch Office

Calif., Burbank—841 So. Orchard Dr. TH 2-2282

#### Representatives

Calif., Glendale—Haskel Engineering & Supply, 1236 So. Central. CI 4-8148  
Calif., Millbrae—Haskel Engineering & Supply, 305 Adrian Rd. OX 7-4046  
Ore., Portland—Hydraulic & Air Equipment Co., 2316 N.W. Savier. CA 2-3295  
Wash., Seattle—Hydraulic & Air Equipment Co., 2460 6th Ave. So. MU 1681

### BRUNNER DIV., DUNHAM-BUSH, INC., 1821 Broad St., Utica 1, N. Y.

Air compressors, Air conditioners (packaged), Refrigeration compressors, Refrigeration condensing units (open-type and semi-hermetic).

#### Branch Offices

Calif., Riverside—1850 Massachusetts Ave. OV 3-0420  
Calif., San Francisco—760 Market St. EX 2-7382

#### Representatives

Ariz., Phoenix—G. L. Jackson, 923 E. San Miguel. CR 4-0022  
Calif., Lakewood—Jack M. Bower, 4813 Dunrobin Ave.  
Calif., Montrose—W. Wickman, 2515 Montrose Ave.  
Calif., Santa Rosa—Jerry Howarth, 696 Speers Rd.  
Colo., Denver—Robert W. Bell, 1558 So. Fairfax St. SK 6-8950  
Ore., Portland—Raymond Potter, 6541 S.E. Division St. BE 4-7446  
Utah, Salt Lake City—Jerry Wilcox, 2280 So. 18th E.

### BUCHANAN ELECTRICAL PRODUCTS CORP., 253 Rt. 22, Hillside, N. J.

Electrical components, connectors and fittings—Terminal blocks (heavy-duty one-piece blocks, AN type strips, sectional heavy-duty pres-SURE-blocks, sectional medium duty pres-SURE-blocks). Connectors (solderless connectors and insulators, solderless terminal lugs, solderless connector and lug installations, pres-SURE-tools and crimping dies), Fittings (conduit and box hardware and fittings).

#### Representatives

Ariz., Phoenix—Melvin C. Long, 422 So. 7th Ave. AL 3-2655  
Calif., Los Angeles—Kenneth Anderson Co., 123 So. Myers St. MI 8517  
Calif., Oakland—Fred Barber, 887 Treble Glen Rd.  
Calif., San Francisco—F. M. Nicholas Co., 714 Harrison St. YU 2-1964  
Colo., Denver—Fred A. Pense, Stapleton Airfield. FR 7-2336  
Ore., Portland—Keeler, White Co., 322 N.W. Fourth Ave. CA 7-0593  
Wash., Seattle—Keeler, White Co., 1041 Sixth Ave. So. EL 2367

### BULL DOG ELECTRIC PRODUCTS CO., 7610 Jos Campau, Detroit 32, Mich.

Circuit breakers, Ducts (bus), Panelboards (electric), Switches (electric), Switchgear equipment.

See advertisement on page 11

#### Branch Office

Calif., Los Angeles—Bull Dog Electric of Los Angeles, 2885 E. Washington Blvd. AN 9-8101

#### Representatives

Calif., Oakland—Safety Switchboard Co., 910 89th Ave. LO 9-7001  
Colo., Denver—Young Electric & Mfg. Co., 2134 Curtis St. AC 2-4841  
Ore., Portland—Coast Electric & Mfg. Co., 1733 N.E. 7th Ave. AT 8-5373

### BUNTING BRASS & BRONZE CO., 715 Spencer St., Toledo 1, Ohio

Standard stock bearings, Electric motor bearings, Sintered bearings, Flange bearings.

#### Branch Offices

Calif., Los Angeles—240 W. 18th St. RI 9-3549  
Calif., San Francisco—277 Seventh St. UN 1-5044

#### Representatives

Calif., North Hollywood—Daniel Harland, 4133 Kraft Ave. PO 2-0128  
Calif., San Mateo—Robert Johnson, 624 Rand St. DI 4-4308

### BUSSMANN MANUFACTURING CO., University at Jefferson, St. Louis 7, Mo.

Fuses.

#### Branch Offices

Calif., Los Angeles—1004 E. 4th St. MA 5-1954  
Calif., San Francisco—2166 Market St. UN 2-2600  
Wash., Seattle—513 E. 125th St. MA 0737

### C & D BATTERIES, INC., Washington & Cherry Sts., Conshohocken, Pa.

Batteries for the mining industry, for marine service, for control, switchgear, and auxiliary power, for emergency lighting, for industrial and material lift trucks, for diesel locomotives, for railroad car lighting and air conditioning, for the communications industry and for fire-alarm systems.

#### Branch Office

Ariz., Phoenix—213 No. First Ave. AL 4-1383

#### Representatives

Calif., La Jolla—722 Fern Glenn. GL 4-6757  
Calif., Los Angeles—Fred Pelletier Co., 1014 Venice Blvd. RI 9-4471  
Calif., San Francisco—McCormick Morgan Co., 324 Fifth St. SU 1-6591  
Colo., Denver—Howard Toncray, 1732 Blake St. CH 4-1102  
Ore., Portland—208 S.W. Stark St. CA 8-9211  
Wash., Spokane—Automotive Electric Co., E. 125 Mission St. FA 5-5379

### CALIFORNIA BELTING & LEATHER CO., 1131 So. Main St., Los Angeles 15, Calif. RI 9-1679

Belting (leather, rubber transmission).

### CARTER CONTROLS, INC., 2800 Bernice Rd., Lansing, Ill.

Cylinders (air, hydraulic).

#### Representatives

Calif., Burbank—Roger Howell Co., 1804 W. Olive. VI 9-1803  
Ore., Portland—Russ Chamberlain Co., 234 S.E. 12th St. BE 2-7124  
Utah, Salt Lake City—Specialty Sales Co., 117 W. Second St. So. DA 2-5553  
Wash., Spokane—Pollard & Co., P. O. Box 198. FA 7-9528

### CASCADE MANUFACTURING CO., 2201 N.E. 201st Ave., P. O. Box 7587, Portland 20, Ore.

Cylinders (air, hydraulic), Lift truck attachments (hydraulically actuated).

### CENTURY ELECTRIC CO., 1806 Pine St., St. Louis 3, Mo.

Gearmotors, Generators (electric), Motors (electric, DC), electric, poly-phase and single-phase AC; variable speed).

#### Branch Offices

Ariz., Phoenix—625 W. Madison Ave. AL 4-8471  
Calif., Los Angeles—1855 Industrial St. TR 8526  
Calif., San Francisco—681 Market St., SU 1-2070  
Colo., Denver—1644 Blake St. AC 2-3515  
Ore., Portland—1238 N.W. Glisan Ave. CA 8-4509  
Utah, Salt Lake City—1482 Major St. IN 7-5489  
Wash., Seattle—607 Third Ave. SE 8443  
Wash., Spokane—W. 130 Pacific St. RI 7-0488

### CERTIFIED FLEXIBLE COUPLINGS, INC., 39 No. Bond St., Mt. Vernon, N. Y.

Certified flexible couplings.

#### Distributor

Calif., Oakland—Pacific Pumping, 9201 San Leandro St.

### CHAIN BELT CO., Milwaukee 1, Wis. (also see SHAFER BEARING DIV.)

Bearings (roller), Chains for drives (detachable link, roller, silent transmission, other), Collars (shaft), Couplings (shaft), Pillow blocks, Pulleys, Sprockets.

#### Branch Offices

Calif., Berkeley—2940 Seventh St. TH 3-6801  
Calif., Los Angeles—7601 Telegraph Rd. RA 3-4751  
Colo., Denver—5460 Colorado Blvd. AM 6-2292  
Ore., Portland—2310 N.W. 24th Ave. CA 3-6121  
Utah, Salt Lake City—375 S.W. Temple. DA 2-4311  
Wash., Seattle—2425 Airport Way. MU 6750

#### Distributors

Ariz., Phoenix—Garrett Supply Co., P. O. Box 4125  
Calif., Bakersfield—Hopper Machine Works, 301 26th St.  
Calif., Cloverdale—Klamath Machinery & Locomotive Works of California  
Calif., El Centro—W. H. Douthitt Steel & Supply Co., P. O. Box 183—Route 1  
Calif., El Centro—Winn Supply Co., 354 E. Main St.  
Calif., Eureka—Eureka Boiler Works & Acme Foundry Co. Foot "E" St.  
Calif., Fresno—Valley Foundry & Machine Works, 2510 So. East Ave.  
Calif., Long Beach—Bay City Bearing Co., 709 W. 16th St.

## CHAPMAN-CLARK

### Representatives

Calif., San Carlos—C. R. Dalton Associates, 132 El Camino Real. LY 1-2654  
 Kan., Wichita—L. J. Morefield Co., 309 So. Glendale. MU 6-6307 (Serves Colorado)  
 Wash., Seattle—Samuel N. Stroum Co., 506 Second Ave. MU 7833

### CHRYSLER CORP., see AMPLEX DIV.

### CIRCLE SEAL PRODUCTS, INC., 2181

E. Foothill Blvd., Pasadena 8, Calif.

Valves (air power line, hydraulic power line).

### Representatives

Ariz., Cornville—Fred O. Rodgers  
 Calif., Oakland—Ditzen Engineering & Sales, 4818 E. 14th St. CY 4-8181  
 Calif., San Jose—Power Transmission, 84 Champa St. AL 5-2167  
 Colo., Denver—Instrument Service, 833 Co., 6002 Telegraph. OL 3-8262  
 Wash., Seattle—Avionics Liaison, Boeing Field, P. O. 15. LA 7602

### CLARK CONTROLLER CO., THE, 1146

E. 152nd St., Cleveland 10, Ohio

Industrial electric controls, Pushbuttons, Pilot lights, Limit switches, AC and DC motor starters and controllers, Relays and control components, Specially engineered controls of all kinds.

### District Sales Offices

Calif., Los Angeles—The Clark Controller Co., 4755 E. 49th St. (West Coast plant)  
 Calif., San Mateo—Clark Controller Co., 122 2nd Ave. DI 4-3601, Ext. 27  
 Colo., Denver—Peterson Co., 4949 Colorado Blvd.  
 Ore., Portland—Polich & Durkin, 734 N.W. Glisan St.  
 Utah, Salt Lake City—Clarence W. Silver Co., 550 W. 7th South St.  
 Wash., Seattle—H. M. Denny Co., 1016 1st Ave. So.

### Representatives

Ariz., Phoenix—Reliable Electric Co., 802 W. Jefferson  
 Calif., Downey—Electrical Distributors, 650 Cleta St.  
 Calif., Inglewood—Inglewood Wholesale Electric, 923 So. Prairie Ave.  
 Calif., Lancaster—Cal-State Electric Supply Co., 45043 No. Yucca St.  
 Calif., Los Angeles—Associated Wholesale Electric, 1111 Santee St.  
 Calif., Los Angeles—Industrial Wholesale Electric, 805 E. Pico Blvd.  
 Calif., Los Angeles—Hollywood Wholesale Electric, 6820 Romaine St.  
 Calif., Los Angeles—National Parts Distributors, 151 No. Vermont Ave.  
 Calif., Los Angeles—Thomas W. Simmons, 611 Wilshire Blvd.

Calif., No. Hollywood—Cal State Electric Supply Co., 10711 Chandler Rd.  
 Calif., Oakland—Pacific Electric Motor Co., 1009 66th Ave.  
 Calif., Sacramento—Van Alstyne & Son Electric Co., 2512 Broadway  
 Calif., San Bernardino—Tri County Electrical Wholesale Co., 453 So. 1st St.  
 Calif., San Bruno—Bergensen Wholesale Electric, 1051 San Mateo St.  
 Calif., San Diego—Pacific Wholesale Electric Co., 702 State St.  
 Calif., San Francisco—Buzzell Electric Works, 130 8th St.  
 Calif., San Francisco—Columbia Electric Manufacturing Co., 275 Steuart St.  
 Calif., San Francisco—Frazer & Hansen, 301 Clay St.

Calif., San Jose—Consolidated Parts, Inc., 581 E. Taylor St.  
 Calif., San Rafael—North Bay Electric Works, Inc., P.O. Box 30  
 Calif., Santa Ana—Orange County Wholesale Electric Co., 1228 So. Main St.  
 Colo., Denver—Weaver Electric Co., 1721 Larimer St.  
 Colo., Denver—Weiner Bros. Electric Supply Co., 1201 Stout St.  
 Ida., Boise—Idaho Chain & Sprocket, Inc., 2400 Warm Springs Ave.  
 Ida., Idaho Falls—Electrical Contractors Supply, 545 W. 20th St.  
 Ida., Idaho Falls—Rossiter Electric Sales & Service, Airport Road  
 Ida., Pocatello—Electrical Contractors Supply, 205 So. 3rd Ave.

Neu., Las Vegas—Osborne & Dermody Supply, 1305 So. A St.  
 Neu., Reno—Osborne & Dermody Supply, P.O. Box 2389, 255 Chestnut St.  
 N. Mex., Albuquerque—Electric Motors Co., 1801 E. Campus Blvd.  
 N. Mex., Carlsbad—H & E Electric Supply Co., 1036 No. Edward St.  
 Ore., Eugene—Eoff Electric Co., 66 W. Sixth

Calif., Los Angeles—Bearing Sales Co., 1950 So. Olive St.  
 Calif., Los Angeles—B. Hayman Co., Inc., 8301 Leonis Blvd.  
 Calif., Los Angeles—Garrett Supply Co., 3844 So. Santa Fe Ave.  
 Calif., Los Angeles—Republic Supply Co. of Calif., 2600 So. Eastland Ave.  
 Calif., Maywood—Bay City Bearing Co., 5275 Atlantic Blvd.  
 Calif., Oakland—Bay City Iron Works, 4th and Washington Sts.  
 Calif., Pomona—Reliable Bearing & Supply Co., 246 So. Towne Ave.  
 Calif., Redding—Gerlinger Steel & Supply, 1527 Sacramento St.  
 Calif., Sacramento—Capital Machine Welding Works, 83 No. 17th St.  
 Calif., San Bernardino—Reliable Bearing & Supply Co., 243 So. E St.  
 Calif., San Diego—Winn Supply Co., 256 7th Ave.  
 Calif., San Jose—Bearing & Equipment Co., 60 So. San Pedro Way  
 Calif., Santa Maria—The Bearing House, P. O. Box 982, Pescadero Rd.  
 Calif., Stockton—Guntert & Zimmerman Sales Div., P. O. Box 1688  
 Calif., Stockton—H. C. Shaw Co., Inc., 240 So. Aurora  
 Calif., Taft—Hopper Machine Works  
 Calif., Ukiah—Klamath Machinery & Locomotive Works of Calif., 720 No. State St.  
 Calif., Ventura—The Bearing House, 1252 No. Ventura Ave.  
 Colo., Cripple Creek—Union Supply Co.  
 Colo., Denver—Union Supply Co., 5460 Colorado Blvd.  
 Ida., Pocatello—Paul Roberts, 850 So. Main  
 Ida., Twin Falls—Paul Roberts, 356 4th Ave.  
 Ida., Wallace—Bitco, Inc.  
 Mont., Billings—Hall-Perry Machinery Co., 902 Central Ave.  
 Mont., Butte—Hall-Perry Machinery Co., 812 E. Iron St.  
 Mont., Great Falls—Hall-Perry Machinery Co., 1116 15th St. No.  
 Mont., Missoula—Hall-Perry Machinery Co., 127 E. Main St.  
 N. Mex., Carlsbad—Carlsbad Supply Co., 601 Park Drive, P. O. Box 1042  
 Ore., Baker—Basche-Sage Hardware Co., 2101 Main St.  
 Ore., Coos Bay—A. B. Daly Co., 824 N. Front St., P. O. Box 240  
 Ore., Eugene—Harmer Mill & Logging Supply Co., 209 Polk St.  
 Ore., Klamath Falls—Klamath Machinery Co., 446 Spring St., P. O. Box 781  
 Ore., The Grande—Basche-Sage Hardware Co.  
 Ore., Portland—Clyde Equipment Co., 1631 N.M. Thurman St.  
 Ore., Portland—H. W. Sharp Co., 71 S.W. Oak St.  
 Ore., Prineville—Prineville Machine & Supply Co., P. O. Box 85  
 Ore., Roseburg—Industrial Supply Co., 132 So. Stephens  
 Ore., Salem—Salem Steel & Supply Co., 180 Court St., P. O. Box 746  
 Utah, Helper—Carbon Transfer & Supply, P. O. Box 180  
 Utah, Ogden—Mountain States Implement Co.  
 Wash., Aberdeen—Whitcher Machinery Co.  
 Wash., Everett—Everett Hardware Co., 2718 Broadway  
 Wash., Spokane—Bitco, Inc., E. 2928 Trent Ave.  
 Wash., Tacoma—Gerrish Machinery Co., 1101 East E St.  
 Wash., Tacoma—R. G. Walter Co., 1722 Pacific Ave.  
 Wash., Walla Walla—Morrison Supply Co., 217 E. Elder St.  
 Wash., Yakima—Dodge-Yakima Supply Co., 109 So. Front St.

### CHAPMAN VALVE MANUFACTURING CO., 203 Hampshire St., Indian Orchard, Mass.

Valves.  
 Branch Offices  
 Calif., Los Angeles—2941 E. 11th St. AN 1-2188  
 Calif., San Francisco—564 Bryant St. SU 1-1934

### CHAR-LYNN CO., 2843 26th Ave. So., Minneapolis 6, Minn.

Cylinders, Filters, Oil bath air cleaners, Oil supply tanks, Quick couplers, Power-packs, pumps, valves (all hydraulic), Couplings (flexible drive), Controls (hydraulic), Fittings and couplings (air, hydraulic), Motors (hydraulic).

Branch Office  
 Colo., Denver—695 So. Garfield St. SP 7-2852  
 Representatives  
 Ariz., Phoenix—Air-Draulics Co., 31 So. 3rd Ave. AL 4-4703, AL 2-2803

Calif., Bakersfield—Bakersfield Hydraulic Jack Co., 503 24th St., FA 3-5666  
 Calif., Compton—Densmore Engineering Co., Inc., 235 E. Greenleaf. NE 6-3959  
 Calif., Fresno—Central Supply Co., 424 N St. Phone 8-4567  
 Calif., Los Angeles—Fornaciari Co., 5350 E. Washington Blvd. AN 9-7595  
 Calif., Oakland—George A. Kushman Co., 2003 E. 14th St. KE 2-0690  
 Calif., Sacramento—L & G Specialties, 910 D St. HU 1-1772  
 Calif., San Jose—Power Transmission Engineering Corp., 84 Keyes St. CY 4-8181  
 Calif., Santa Ana—H. C. Shaw Co., 1302 E. Delhi Rd.  
 Calif., South Gate—Hydraulic Tool & Equipment Co., 10825 Sessler St. LO 7-2409  
 Calif., Stockton—H. C. Shaw Co., 240 So. Aurora. HO 6-6751  
 Colo., Denver—George Brothers, Inc., 973 Broadway  
 Ida., Caldwell—Mitchell, Lewis & Staver, Bloomquist Ave., P.O. Box 370. Phone 465  
 Ida., Downey—Morgan's, 75 Main St. Phone 2816  
 Ida., Idaho Falls—Morgan's, 1155 No. Yellowstone Ave. Phone 3054  
 Mont., Billings—Midland Implement Co., Inc., 2301 Montana Ave.  
 N. Mex., Clovis—Dorris Distributing Co., Inc., 1904 Sheldon St.  
 Ore., Portland—Cascade Supply Co., 208 S.E. Hawthorne Blvd. FI 7474  
 Ore., Portland—Russ Chamberlin Co., 234 S.E. 12th Ave. EA 7125  
 Ore., Portland—Mitchell, Lewis & Staver, 801 S.E. Alder St. BE 2-4191  
 Utah, Salt Lake City—General Implement Distributors, 415 W. 2nd St.  
 Wash., Seattle—Polson Implement Co., 631 Western Ave. MA 2891  
 Wash., Seattle—Spencer Aircraft Industries, 8410 Dailies Ave. LA 0911  
 Wash., Spokane—Calkins Manufacturing Co., No. 1102 Atlantic St. FA 4518  
 Wash., Spokane—Mitchell, Lewis & Staver, E. 2626 Trent Ave. LA 7842  
 Wash., Spokane—Polson Implement Co., E. 210 Montgomery St. EM 5515  
 Wash., Walla Walla—Morrison Supply Co., 217 E. Alder. Phone 4081  
 Wash., Yakima—Central Chain & Transmission Co., Inc., 709 So. First St. Phone 2-5810, 2-7046

### CHICAGO BELTING DIV., CHICAGO-ALLIS MFG. CORP., 113-125 No. Green St., Chicago 7, Ill.

Belting, drive (leather), Belts, V (leather).

### Branch Office

Calif., Santa Monica—3002 Fourth St.  
 Representatives  
 Calif., Arcata—Munnell & Sherrill, Inc., 1563 G St. Phone 1123  
 Ore., Eugene—Munnell & Sherrill, Inc., 1450 W 7th St. Phone 4-3287  
 Ore., Portland—Munnell & Sherrill, Inc., 1163 N.E. 63rd Ave. AT 1-0021  
 Wash., Seattle—Washington Belting & Rubber Co., 2761 First Ave. So. EL 5650  
 Wash., Spokane—Nott-Atwater Co., So. 157 Monroe St. MA 4577  
 Wash., Tacoma—Washington Belting & Rubber Co., 672 E. 11th St. MA 8158

### CHICAGO RAWHIDE MFG. CO., 1301 Elston Ave., Chicago 22, Ill.

Gears (bevel, helical, spur, worm), Lacing (belt).

### Branch Offices

Calif., Pasadena—490 E. Walnut St. RY 1-8897  
 Calif., San Francisco—430 Ninth St. MA 1-5934

### CHIKSAN CO., 330 N. Pomona Ave., Brea, Calif. JA 9-2121

Fittings and couplings (air, hydraulic), Joints (rotating, swivel).

### Branch Office

Calif., Oakland—600 16th St. GL 2-4202  
 Representatives  
 Ariz., Phoenix—Cone & Wallace Co., 650 W. Vermont. CR 4-1600  
 Ore., Portland—Henry Kals Co., 4023 No. Interstate Ave. TR 3558  
 Utah, Salt Lake City—The Lang Co., 1st So. 2nd West. Phone 3-5831  
 Wash., Seattle—E. C. Griffin Co., 539 1st Ave. So. EL 4216.

### CHRISTIE ELECTRIC CORP., 3410 W. 67th St., Los Angeles 43, Calif. PL 3-2607

Stavolt automatically regulated power rectifiers in Silicon or Selenium; Rectodyne manually controlled power rectifiers.



## CLARY - CONGRESS

Ore., Grants Pass—Electric Motor Works, 1725 Williams Secondary  
 Ore., Portland—Caldwell Machinery Co., 738 N.W. Gilliam St.  
 Ore., Portland—Eoff Electric Co., 509 W. Tenth  
 Ore., Portland—Platt Electric Supply, Inc., 1305 N.W. Davis St.  
 Ore., Portland—C. E. Riggs, Inc., 317 N.W. Broadway  
 Utah, Orem—Roberts Wholesale Supply Co., State & Center Sts.  
 Utah, Salt Lake City—Western Supply Co., 357 W. Second St.  
 Wash., Aberdeen—Aberdeen Electric Co., Inc., 217 E. Market St.  
 Wash., Seattle—Globe Electric Supply Co., 215 Second Ave. So.  
 Wash., Tacoma—Demick Electric Supply Co., 2919 Alaska St.

### CLARY CORP., 408 Junipero St., San Gabriel, Calif.

Automatic controls, electronic equipment, pressure regulators and valves of many sizes and kinds.

#### Branch Offices

(Branch offices in principal Western cities.)  
 Representatives  
 (Authorized dealers in every area of the West.)

### CLAYTON MANUFACTURING CO., 401 No. Temple City Blvd., El Monte, Calif. CU 3-4131

Generators (steam), Boilers (package).

#### Representatives

Ariz., Phoenix—H. M. Craig, 1636 No. 26th Pl. BR 5-1674  
 Calif., San Bernardino—G. F. Wheeler, Rt. 1, P.O. Box 331, Phone 9-3280  
 Calif., San Gabriel—R. C. Welch, 256 Alhambra Terrace, AT 9-4320  
 Colo., Littleton—S. F. Buscarello, 6376 So. Grant Ave. PY 4-3555  
 Wash., Seattle—W. P. Currans, P.O. Box 9036, Queen Anne Sta. CA 3770

#### Distributors

Ariz., Nogales—Motor Supply Co., 227 Grand Ave.  
 Ariz., Phoenix—Hugh Craig Sales & Service Co., 1636 No. 26th Pl.  
 Ariz., Phoenix—Kerstens Parts & Machine, 1321 So. Central  
 Ariz., Phoenix—Western Chemical Co., Inc., P.O. Box 3726  
 Calif., Emeryville—Beeler Corp., 4053 Harlan St.  
 Calif., Escondido—Webb Bros., Inc., 252 W. Grand Ave.  
 Calif., Fresno—Service Welding & Boiler Shop, 250 Broadway  
 Calif., Gardena—Oil Heating Equipment Co., 17926 So. Broadway  
 Calif., La Mirada—Madsen Iron Works, 14120 E. Rosecrans Ave.  
 Calif., Los Angeles—The American Laundry Machinery Co., E. Fourth St.  
 Calif., Los Angeles—Cherry Burrell Corp., 4621 Pacific Blvd.  
 Calif., Los Angeles—E. L. Chrisman Co., Inc., 8255-63 Compton Ave.  
 Calif., Los Angeles—Foster Machinery Co., 1220 E. 58th St.  
 Calif., Los Angeles—Garlinghouse Fremont Co., 6046 E. Washington Blvd.  
 Calif., Los Angeles—Green Spot, Inc., 1501 Beverly Blvd.  
 Calif., Los Angeles—Howard Supply Co., Inc., 5125 Santa Fe Ave.  
 Calif., Los Angeles—Oil Well Heating Systems, Inc., National Oil Bldg., 6th & Grand Ave.  
 Calif., Los Angeles—Pantex Mfg. Co.  
 Calif., Los Angeles—Prosperity Co., 2484 W. Washington Blvd.  
 Calif., Los Angeles—Troy Laundry Machinery Co.  
 Calif., Redwood City—Western Power Equipment Corp., 909 Broadway  
 Calif., Sacramento—Norris & Atherton, 3922 Broadway  
 Calif., San Diego—Standard Iron Supply, Inc., 1821 Harbor Dr.  
 Calif., San Francisco—Cherry Burrell Corp., 2675 Folsom St.  
 Calif., San Francisco—West Coast Laundry Machinery Co., 3246 17th St.  
 Calif., San Gabriel—Walter N. Steele Machine & Supplies, 6737 N. Vista  
 Colo., Denver—Armitage Sales & Service, 591 Utica St.  
 Colo., Denver—Dairies Service, Inc., 1936 W. 33rd Ave.  
 Colo., Denver—Ferrin Service Co., 1360 W. Cedar Ave.  
 Colo., Denver—Hurley Co., Inc., 2140 Market St.  
 Colo., Denver—Landes, Zachary & Peterson, Inc., 275 Kalamath St.  
 Colo., Denver—Pantex Mfg. Co.  
 Colo., Denver—Stebbins Mfg. & Supply Co., 1733 Blake St.

Colo., Denver—Troy Laundry Machinery Co.  
 Colo., Denver—Wagner Machine & Mill Supply, Inc., 4444 York St.  
 Colo., Grand Junction—Landes, Zachary & Peterson, Inc.  
 Ida., Boise—Engineers Sales & Service, Inc., 410 Capitol Blvd.  
 N. Mex., Albuquerque—Landes, Zachary & Peterson, Inc., 1609 2nd N.W.  
 Ore., Eugene—Surco System, 347½ W. Fifth St.  
 Ore., Portland—Cramer Machinery Co., 404 N.W. Tenth Ave.  
 Ore., Portland—G & M Steamer Service, 1834 S.E. Ash St.  
 Ore., Portland—Monroe Food Machinery, Inc., 1600 S.W. Harbor Dr.  
 Ore., Portland—A. W. Mortensen Co., 1117 S.E. Morrison  
 Ore., Portland—Star Machinery Co., 801 So. Front Ave.  
 Ore., Portland—Troy Laundry Machinery Co.  
 Ore., Salem—James O. Leavitt Co., 1615 Roosevelt St.  
 Utah, Ogden—James O. Leavitt Co., Eccles Bldg., 24th and Washington Sts.  
 Utah, Salt Lake City—Landes, Zachary & Peterson, Inc., 153½ W. Second So.  
 Utah, Salt Lake City—Lindquist Boiler Co., 1374 So. State St.  
 Utah, Salt Lake City—Monroe Food Machinery, Inc., 180 So. Fourth St.  
 Utah, Salt Lake City—R E M Co., 933 Edison St.  
 Utah, Salt Lake City—Troy Laundry Machinery Co.  
 Wash., Seattle—Automotive Parts & Equipment Co., 1516 11th Ave.  
 Wash., Seattle—James O. Leavitt Co., 2702-04 First Ave. So.  
 Wash., Seattle—Monroe Food Machinery, Inc., 1226 First Ave. So.  
 Wash., Seattle—Northern Commercial Co., 811 First Ave.  
 Wash., Seattle—Prosperity Co., 617 Harrison St.  
 Wash., Seattle—Star Machinery Co., 241 Lander St.  
 Wash., Seattle—Troy Laundry Machinery Co.  
 Wash., Spokane—Monroe Food Machinery, Inc., 715 Madelia  
 Wash., Spokane—Star Machinery Co., 415 E. Sprague Ave.  
 Wyo., Casper—Casper Supply Co., 444 So. Center St.  
 Wyo., Casper—Moos Equipment Supply Co., 3100 E. Yellowstone  
 Wyo., Casper—Swan Specialties Co., P. O. Box 515

### CLEAVER-BROOKS, 326 E. Keefe Ave., Milwaukee 12, Wis.

Boilers and boiler equipment.

#### Representatives

Ariz., Phoenix—Carnes-Hoaglund Sales Co., 420 No. 15th Ave. AL 8-2793  
 Calif., Long Beach—Heat & Power Equipment Co., 2322 Linden Ave. LO 4-8423  
 Calif., Los Angeles—Heat & Power Equipment Co., 3430 Sunset Blvd. NO 3-3265  
 Calif., San Francisco—R. F. MacDonald Co., 1485 Bayshore Blvd. JU 4-0648  
 Colo., Denver—McCartney-Denver Co., 1660 11th St. AC 2-4791  
 Mont., Billings—Lester Engineering Sales, 108 No. 23rd St. Phone 2-2105  
 N. Mex., Albuquerque—Boyd Industrial Engineering, Inc., 112 Granite, N.W. Phone 3-2247  
 Ore., Portland—A. W. Mortensen Co., 1117 S.E. Morrison St. BE 5-3165  
 Utah, Salt Lake City—The Lang Co., 267 W. First So. St. DA 8-8341  
 Wash., Seattle—Power & Controls, Inc., 5505 17th Ave., N.W. HE 3819

### CLEVELAND FUEL EQUIPMENT CO., 1111 Brookpark Rd., Cleveland 9, Ohio

Indicating instruments (draft, air, pressure, flue gas temperature, differential, single pointer, multi-pointer), Furnace draft regulators (draft or pressure sensitive, sequence damper controls, non-sequence damper controls), Combustion systems (master controller—fuel and air feed control, proportioning and timing, complete programming), Electric power actuators (hand wheel optional, integral fuel feed timer optional), Air safety switches (draft, pressure, differential, signal light, post-purge, pre-purge), Smoke indicators and controls (alarm type with meter, overfire jet control with time delay), Panelboards and control cabinets (prewired and factory tested, custom engineered), Systems engineering (special controls, engineered for specific requirements).

#### Representatives

Ariz., Phoenix—Cone & Wallace, 650 W. Vermont St. CR 4-1600  
 Calif., Los Angeles—R. P. Carmien Co., 816 San Fernando Bldg. VA 0025

Calif., San Francisco—General Combustion Equipment Co., 67 Beale St. EX 7-0440  
 Colo., Denver—Automatic Control & Equipment Co., 1925 Blake St. AC 2-9525  
 Ore., Portland—W. E. Norte Co., 2225 N.E. Broadway, AT 8-3459  
 Utah, Salt Lake City—Power Engineering Co., 1806 So. State St. IN 7-6828  
 Wash., Seattle—Control & Steam Equipment Co., Smith Tower, MU 2378

### CLEVELAND WORM & GEAR CO., 3249 E. 80th St., Cleveland 4, Ohio

Drives (variable speed), Gears (worm), Reducers, speed (worm gear), Transmission, variable speed.

See advertisement on page 72

#### Representatives

Calif., Los Angeles—Mark Costello Co., 6511 Whittier Blvd. RA 3-4969  
 Calif., San Francisco—F. Somers Peterson Co., 157 13th St. MA 1-2255  
 Colo., Denver—J. M. Warner Co., 600 W. 48th Ave. AC 2-2685  
 Ore., Portland—Bearing Sales & Service, Inc., 1645 N.W. Hoyt St. CA 3-6301  
 Utah, Salt Lake City—Sales Engineering Co., Inc., 526 W. 8th South St. EL 5-1162  
 Wash., Seattle—Bearing Sales & Service, Inc., 2908 Sixth Ave. So. MU 0331

### CLIPPER BELT LACER CO., 974 Front Ave. N.W., Grand Rapids 2, Mich.

Belt lacing equipment.

#### Branch Office

Calif., Oakland—2511 Broadway. TE 2-0348

### COLLYER INSULATED WIRE CO., INC., 249 Roosevelt Ave., Pawtucket, R. I.

Electric wire cables and cords.

#### Representatives

Calif., Los Angeles—Allied Industries, 412 Seaton St. MU 2244  
 Calif., San Francisco—The Baxter Co., 101 Kansas St. MA 1-8636  
 Ore., Portland—Bruce-Emmett Co., 880 S.E. Alder St. BE 2-8117  
 Wash., Seattle—Bruce-Emmett Co., 1016 First Ave. So.

### COLUMBIA CABLE & ELECTRIC CORP., 255 Chestnut St., Brooklyn 8, N. Y.

Conduits (flexible steel, liquid tight electrical), Cable (armored, non-metallic sheathed, underground feeder), Hose (flexible metallic), Tubing (electric, metallic).

#### Representatives

Calif., Los Angeles—Frank H. Bran Co., 607 E. 6th St. MI 7663  
 Calif., San Francisco—Robert R. Prussia Co., 524 2nd St. EX 2-0554  
 Ore., Portland—The Sanderlin Co., 201 S.E. Washington. VE 0121  
 Wash., Seattle—The Sanderlin Co., 129 1st Ave. W. AL 0990

### COMBUSTION ENGINEERING, INC., 200 Madison Ave., New York 16, N. Y.

Boilers (all types), Stokers, mechanical (all types).

#### Branch Offices

Calif., Los Angeles—510 W. 6th St. TR 6828  
 Calif., San Francisco—155 Sansome St. YU 2-6262  
 Wash., Seattle—Skinner Bldg. SE 5218  
 Utah, Salt Lake City—Joy & Cox, Inc., 415 Judge Bldg. EM 4-5124

### COMMERCIAL SHEARING & STAMPING CO., THE, 1775 Logan Ave., Youngstown, Ohio

Controls (hydraulic), Cylinders (hydraulic), Motors (hydraulic), Pumps (hydraulic power), Valves (hydraulic power line).

#### Branch Office

Utah, Salt Lake City—P.O. Box 2036, HU 4-4491

### CONGRESS DRIVES DIV., 3750 E. Outer Dr., Detroit 34, Mich.

Pulleys, Flexible couplings, Shaft collars, Pillow blocks, Flange bearings, FHP V-belts.

#### Branch Offices

Calif., Los Angeles—517 So. Mariposa. DU 2-2645  
 Colo., Denver—3063 Albion St. DE 3-1747  
 Ore., Portland—10340 N.E. Sandy Blvd. AL 4-7878



## CONTINENTAL AUTOMATIC BOILERS, BOILER ENGINEERING & SUPPLY CO., INC., Manavon St., Phoenixville, Pa.

**Automatic boilers.**  
**Representatives**  
Calif., El Cerrito—American Engineering & Mfg. Co., 11836 San Pablo Ave. LA 5-6291  
Calif., Hollywood—Pacific Engineering Equipment Co., 1227 Horn Ave.  
Colo., Denver—Champion Specialty Co., 2651 Broadway  
Utah, Salt Lake City—Power Engineering Co., 1806 So. State St. Phone 7-6838  
Wash., Seattle—International Sales Co., 1230 Westlake Ave. No. AL 6116

## CONTINENTAL ELECTRIC CO., INC., 325 Ferry St., Newark 5, N. J.

Generators (electric), Motors (electric DC, polyphase AC).  
**Branch Office**  
Calif., Los Angeles—1709 W. 8th St. DU 7-1267

## CONTINENTAL MOTORS CORP., see CONTINENTAL SALES & SERVICE CO.

## CONTINENTAL SALES & SERVICE CO., 3817 Santa Fe Ave., Los Angeles, Calif.

Aircraft engines, Internal combustion engines (gasoline, butane, diesel, natural gas).

**Branch Offices**  
Calif., Covina—780 Cypress. ED 2-5152  
Calif., Mountain View—P. O. Box 805. YO 7-5048  
Calif., San Mateo—4102 Beresford. FI 1-0866

**Distributors**  
Alaska, Anchorage—Airport Machinery Co., Inc. Fifth Ave. at Merrill Field  
Ariz., Phoenix—Automotive Sales Co., 146 So. Second Ave.  
Ariz., Tucson—Equipment Sales & Service Co., 2525 No. First St.

B. C., Vancouver—Pacific Tractor & Equipment Ltd., 505 Railway St.  
Calif., Bakersfield—Glenn Rose Engine Co., 502 So. Real Rd.  
Calif., Fresno—Art Schedler's Engine Rebuilders, 624 Broadway

Calif., El Centro—Valley Auto Supply Co., 633 State St.  
Calif., Long Beach—Industrial Power & Equipment, 3160 Orange  
Calif., Long Beach—Smith & Thorp, 141 E. Anaheim St.

Calif., Los Angeles—Harval Truck Equipment Co., 1000 E. Eighth St.  
Calif., Maywood—M & M Truck Parts, 3501 E. Slauson  
Calif., Modesto—Barnes Machine Shop, 615 Third St.

Calif., Oakland—California Equipment Co., 1724 Cypress St.  
Calif., Sacramento—Gerlinger Motor Parts, 2020 Kay St.  
Calif., San Diego—Auto Gear & Supply, 1369 State St.

Calif., San Francisco—California Equipment Co., 660 Bryant St.  
Calif., San Jose—Penniman & Richards, 493 So. Market St.  
Calif., Santa Ana—Blystone Equipment Co., 2649 W. First St.

Calif., Santa Ana—James Requarth, 111 Spurgeon St.  
Calif., Stockton—Automotive Parts Co., 244 No. Hunter St.  
Hawaii, Honolulu—Hawaiian Equipment Co., P. O. Box 2990

Ida., Idaho Falls—Automotive Equipment & Supply Co., 385 Airport Rd.  
Ida., Twin Falls—Motor Mercantile Co., 434 Main Ave. So.  
Nev., Las Vegas—Blystone Equipment Co., 2840 Fremont

Ore., Portland—Automotive Equipment Co., 311 N.E. Oregon St.  
Utah, Ogden—Motor Mercantile Co., 2587 Grant Ave.  
Utah, Salt Lake City—Motor Mercantile Co., 54 W. Seventh St.

Wash., Longview—Kellogg Automotive, 1340 Vandercook Way  
Wash., Seattle—A. H. Cox & Co., 1757 First Ave. So.  
Wash., Spokane—Skaggs Automotive, Inc., 1107 W. Second Ave.

**CONTROL PANEL CORP., 517 W. Monroe St., Chicago 6, Ill.**  
Automatic control panels for process or machine control systems (electrical or combinations of electrical, hydraulic and pneumatic).

**Representatives**  
Ore., Portland—Fred W. Carlson Co., 935 N.W. 12th Ave. AT 3798  
Wash., Seattle—Fred W. Carlson Co., 1201 Dexter Ave. EL 6630

## COOK, H. N., BELTING CO., 401 Howard St., San Francisco 5, Calif.

**DO 2-6681**  
Belting, drive (chain or link), Belting, drive (composition, leather, rubber), Belts (timing), Belts, V (composition, leather, rubber), Chains for drives (detachable link, roller, silent transmission, other), Fittings and couplings (air, hydraulic), Hoses (air, flexible metallic, hydraulic), Lacing (belt), Pulleys, Sheaves, Sprockets.

## COOPER SPLIT ROLLER BEARING CORP., P. O. Box 10443, Pittsburgh 34, Pa.

**Split roller bearings.**  
**Representatives**  
Alaska, Anchorage—Bearing Engineering & Supply Co., 620 C St.  
Ariz., Phoenix—Edward D. Maltby Co., 120 So. Fourth Ave. AL 2-5251

Calif., Los Angeles—Edward D. Maltby Co., 1940 So. Figueroa St. RI 7-9191  
Calif., Los Angeles—Pacific Bearings, 1210 So. Hope St. PR 3371  
Calif., Maywood—Edward D. Maltby Co., 4035 E. 52nd St. LO 5-5304

Calif., Oakland—Bearing Engineering Co., 1019 Harrison St. TW 3-2251  
Calif., San Diego—Edward D. Maltby Co., 745 15th St. BE 3-7278  
Calif., San Francisco—Bearing Engineering Co., 1545 Mission St. HE 1-1500

Colo., Denver—Bearing Service & Supply Co., 4433 Claude Ct. AC 2-5991  
Hawaii, Honolulu—C. M. Lovsted & Co., Inc., 1227 Hopaka St.  
Ida., Boise—Western Bearings, Inc., 520 Front St. Phone 2-6583

Ida., Idaho Falls—Bearing Service & Supply Co.  
Ida., Pocatello—Western Bearings, Inc., 156 So. Third St. Phone 3518  
Ida., Twin Falls—Western Bearings, Inc., 223 Fourth Ave. W. Phones 4208, -9

Mont., Billings—Bearing Supply Co., Second Ave. and 12th St. No. Phones 9-1195, 9-3827  
Nev., Reno—Sierra Machinery Co., Inc., 307 Morrill Ave. Phone 3-1301  
Ore., Eugene—Bearing Sales & Service, 225 Seventh Ave. W. DI 5-0325

Ore., Portland—Bearing Sales & Service, 1645 N.W. Hoyt St. CA 3-6301  
Ore., Portland—J. W. Minder Chain & Gear Co., 807 S.E. Hawthorne St. BE 6-1131  
Ore., Roseburg—Bearing Sales & Service, 729 S.E. Stephens St. OR 2-2603

Utah, Salt Lake City—Bearing Service & Supply Co., 1207 So. Main. IN 6-8776  
Wash., Aberdeen—Bearing Sales & Service, 317 E. Market St. AB 5820  
Wash., Everett—Bearing Sales & Service, 2803 Grand Ave. CE 1185

Wash., Longview—Bearing Engineering & Supply Co., 1011 15th Ave.  
Wash., Longview—Bearing Sales & Service, 1131 Commerce Ave. HA 6-1850  
Wash., Seattle—Bearing Engineering & Supply, 2548 Airport Way at Lander St. MA 2744

Wash., Seattle—Bearing Sales & Service, 2908 Sixth Ave. So. MU 0331  
Wash., Seattle—C. M. Lovsted & Co., Inc., 4000 W. Marginal Way. AV 4000  
Wash., Spokane—A. G. Mohr Co., E. 102 Sprague Ave. MA 2109

Wash., Tacoma—Bearing Sales & Service, 1715 Pacific Ave. MA 0104

## COPES-VULCAN DIV., BLAW-KNOX CO., 939 W. 26th St., Erie 4, Pa.

Blowers (soot), Boiler feed water regulators, Controls (combustion), Desuperheaters, Governors (pump), Regulators (pressure), Valves (pressure reducing).

**Representatives**  
Calif., Los Angeles—Gil Moore & Co., 714 W. Olympic Blvd.  
Calif., San Francisco—Gil Moore & Co., 1001 Tennessee St.

Colo., Denver—Hank Thurston Co., 475 Acoma St.  
N. Mex., Albuquerque—Denver Fire Clay Co., 121 No. 7th St.  
Utah, Salt Lake City—C. H. Spencer & Co., 210 W. 33rd St.

Wash., Seattle—Pacific Steam Control Co., 4003 Aurora Ave.

## CORNELIUS CO., THE, 550 39th Ave. N.E., Minneapolis 21, Minn.

Air compressors (portable).  
**Representatives**  
Calif., Los Angeles—Healthways, 3669 Seventh Ave. RE 3-9107

Calif., Los Angeles—U.S. Divers Corp., 11201 West Pico Blvd. BR 2-7905

## CROUSE-HINDS CO., Wolf and Seventh No. Sts., Syracuse 1, N. Y.

Condulets (industrial electrical equipment for hazardous and non-hazardous locations), Floodlights, Aviation lighting equipment, Traffic signals.

**Branch Offices**  
Calif., Los Angeles—714 W. Olympic Blvd. RI 9-3189, -2614  
Calif., San Francisco—370 Brannan St. GA 1-5267

Colo., Denver—1156 Bannock St. TA 5-6639  
Ore., Portland—212 N.W. 14th Ave. CA 7-2115  
Utah, Salt Lake City—25 E. Second St. So. EM 3-5513  
Wash., Seattle—566 Broad St. AL 7262

## CULLMAN WHEEL CO., 1344 Altgeld St., Chicago 14, Ill.

Chains for drives (roller), Couplings (shaft, flexible), Gears (spur), Sprockets.

**Branch Office**  
Calif., Los Angeles—4395 E. Olympic Blvd. AN 9-9435

**Representatives**  
Calif., Fresno—Elliott Manufacturing Co., 1735 Ventura Ave. Phone 3-6236  
Calif., Los Angeles—Casey Bearing Co., 1155 So. Hill St. RI 9-5327

Calif., Oakland—George M. Philpott Co., 2928 Poplar St. GL 2-0458  
Calif., San Francisco—George M. Philpott Co., 1060 Bryant St. HE 1-5475  
Calif., Stockton—Geiger Iron Works, Scott & Union Ave. HO 6-3623

Ore., Portland—George M. Philpott Co., 2353 N.W. 21st Ave. AT 9327

## CURTIS MANUFACTURING CO., 1905 Kienlen Ave., St. Louis 20, Mo.

Air compressors (portable, stationary), Cylinders (air).

**Representatives**  
Calif., Berkeley—R. K. McCoy, 3033 San Pablo. AS 3-6726  
Calif., Los Angeles—L. L. Meikle, 2844 So. Grand. RI 8-0151  
Ore., Portland—L. L. Meikle, 1018 S.E. Eighth. FI 7469

## CUTLER-HAMMER, INC., 315 No. 12th St., Milwaukee 1, Wis.

Circuit breakers, Clutches, Control centers, Controls (electric, electric motor), Panelboards (electric), Regulators (pressure), Switches (automatic, electric).

**Branch Offices**  
Calif., Fresno—155 Van Ness Ave. AM 8-3301  
Calif., Los Angeles—6431 Bandini Blvd. RA 3-8391

Calif., Sacramento—1331 T St. GI 2-2351  
Calif., San Francisco—2130 Third St. HE 1-3855  
Colo., Denver—126 W. 5th Ave. SH 4-2495  
Ore., Medford—1320 Queen Anne Ave. SP 2-7248

Ore., Portland—208 S.W. Stark St. CA 7-2405  
Utah, Salt Lake City—165 So. 1st W. EM 3-5013  
Wash., Seattle—619 8th Ave. So. EL 4032  
Wash., Spokane—E. 1717 Thurston Ave. MA 4-9702

## CYCLOTERM DIV., NATIONAL U. S. RADIATOR CORP., 157 E. First St., Oswego, N. Y.

Cyclotherm steam and hot water generators.

**Representatives**  
Calif., Los Angeles—L. J. Prues & Associates, 5445 E. Beverly Blvd. RA 3-5109  
Calif., Milbrae—Garratt Engineering & Equipment Co., 30 Rollins Rd. OX 7-2253  
Colo., Denver—Ralph Carter, 62 So. Ash St. EA 2-2733

Utah, Salt Lake City—Abco-Pacific, Inc., 1200 So. State St. IN 6-6141  
Wash., Seattle—Abco-Pacific, Inc., 222 Lloyd Bldg., P. O. Box 575

## DAVID BROWN, INC., see BROWN, DAVID, INC.

## DAYSTROM, INC., see WESTON ELECTRICAL INSTRUMENT CORP.

## DAYTON RUBBER CO., THE, 2352 W. Riverview, Dayton, Ohio

Belting (V-type), V-belts, Sheaves, Pulleys.

**Branch Office**  
Calif., Los Angeles—909 E. Slauson Ave., K. L. Harvey, Reg. Mgr.

**Representatives**  
Dayton distributors are found in the yellow pages of your telephone directory under "Belting"

## DEGEN-DOERR

**DEGEN, L. P., BELTING CO.,** 260 Mission St., San Francisco 5, Calif. EX 2-2820

Belting, drive (composition, leather, rubber), Belts, V (composition, leather, rubber), Chains for drives (roller), Clutches, Fittings and couplings (air, hydraulic), Hose (air, flexible metallic, hydraulic), Lacing (belts), Packing (leather, rubber), Sheaves, Sprockets.

**DELCO-REMY DIV., GENERAL MOTORS CORP.,** 2401 Columbus Ave., Anderson, Ind.

Batteries, Generators (electric, automotive), Motors (electric, DC, starting), Regulators (generator).

Products sold through United Motors System offices in all major Western locations.

**DELTA SWITCHBOARD CO.,** 605 W. Fremont St., Stockton 1, Calif.

Control centers, Electric panelboards, Unit substations, Switchgear equipment.

**DENISON ENGINEERING CO., THE,** 1160 Dublin Rd., Columbus 16, Ohio  
Controls, Cylinders, Motors, Pumps, Valves (all hydraulic).

See advertisement on page 39

**Branch Office**  
Calif., Hawthorne—565 No. Prairie Ave. OR 8-6069, OS 5-4463

**Representatives**  
Utah, Salt Lake City—Mason Machine Tool Co., 415 So. Second E. Phone 4-0189  
Wash., Seattle—Star Machinery Co., 241 Lander St. EL 9760

**DENSMORE ENGINEERING CO., INC.,** 235 E. Greenleaf St., Compton, Calif.

Hydraulic telescopic cylinders, Hydraulic ASAE type cylinders, Hydraulic machine tool type cylinders, Hydraulic cylinders to customers' specifications, Pneumatic (air) cylinders to customers' specifications, Pneumatic cylinders belted type, Special hydraulic valves.

**Branch Offices**  
Calif., Oakland—2003 E. 14th St. KE 2-0690  
Calif., Sacramento—207 O St. GI 3-7949  
Calif., San Diego—1115 F St. BE 4-6767  
Wash., Seattle—8410 Dallas Ave. LA 0911

**Representatives**  
Ariz., Phoenix—Air-Draulic Co., 3133 N. 29th Ave. AL 8-6441  
Calif., Anaheim—Allied Equipment Distributors, 1541 Lincoln Ave. KE 5-6091  
Calif., Bakersfield—Hydraulic Jack Co., 503 24th St. FA 3-5666  
Calif., Bell Gardens—Paul Munroe Co., 6430 E. Gage. LU 7-5226  
Calif., Chico—John F. Gage Co., P. O. Box 421. FI 2-2613  
Calif., Eureka—Eureka Boiler Works. HI 3-1681  
Calif., Fresno—Central Supply Co., 424 M St. Phone 8-4765  
Calif., Glendale—Carl J. Kennedy Co., 1105 No. Pacific Ave. CH 5-3145  
Calif., Los Angeles—Circle Seal Supply Co., 4863 Telegraph Rd. AN 9-8289  
Calif., Los Angeles—Fornaciari Co., 5350 E. Washington Blvd. AN 9-7595  
Calif., Los Angeles—Palley Supply Co., 2263 E. Vernon. LU 8-1153  
Calif., Oakland—George A. Kushman Co., 2003 E. 14th St. KE 2-0690  
Calif., Oakland—L & G Specialties, 207 O St. GI 3-7949  
Calif., San Diego—General Industrial Supply Co., 1115 F St. BE 4-6767  
Calif., San Francisco—Calpac Equipment Co., 50 Hawthorne St. GA 1-0730  
Calif., San Jose—Power Transmission Engineering Corp., 84 Keyes St. CY 4-5181  
Calif., South Gate—Hydraulic Tool & Equipment Co., Inc., 10825 Sessler St. LO 7-2409  
Calif., Winton—G & M Equipment Co., P. O. Box 98. EL 8-5677  
Colo., Denver—Ernest Ritchie, Jr., 1305 Ivanhoe Way. SK 6-1057  
Nev., Las Vegas—Inland Service & Supply Corp., 300 W. Wyoming St. DU 2-6186  
Ore., Portland—Western Machinery Corp., 1035 S.E. Ninth Ave. BE 6-4117  
Wash., Seattle—Spencer Aircraft Industries, Inc., 8410 Dallas Ave. LA 0911  
Wash., Seattle—Stephen Thurlow Co., Room 203, 1731 First Ave. So. MU 5488

**DETROIT DIESEL ENGINE DIV., GENERAL MOTORS CORP.,** 13400 W. Outer Dr., Detroit 28, Mich.

General Motors two-cycle Detroit Diesel engines, ranging from 30 to 893 hp.

**Branch Office**  
Calif., San Francisco—1426 Russ Bldg. EX 7-0273

**Representatives**  
Ariz., Phoenix—Diesel Service Co., 1914 E. Buchanan. AL 8-8666  
Calif., Berkeley—West Coast Motors, 1077 Eastshore Hwy. LA 5-2261  
Calif., Los Angeles—Anderson-O'Brien Co., 746 E. Washington Blvd. RI 9-7795  
Colo., Denver—Colorado Builders, 1534 Blake St. WE 5-3571  
Ida., Boise—Southern Idaho, 204 Myrtle St. Phone 3-6409  
Nev., Reno—Sierra Machinery Co., 307 Morrill Ave. Phone 3-1301  
N. Mex., Albuquerque—Harry Cornelius Co., 1510 Second St. N.W. Phone 3-1776  
Ore., Portland—Gunderson Bros. Engineering, 225 N.W. 14th. CA 3-8171  
Wash., Seattle—Evans Eng. & Equipment Co., 4300 11th Ave. N.W. HE 9000  
Wash., Spokane—Intermountain Equipment, 611 E. Sprague. TE 8-2521

**DETROIT STOKER CO.,** 1510 E. First St., Monroe, Mich.

Boilers and boiler equipment.

**Representatives**  
Calif., San Francisco—C. C. Moore & Co. Engr., 450 Mission St. GA 1-3484  
Ore., Portland—C. C. Moore & Co. Engr., Failing Bldg. CA 9-6884  
Wash., Seattle—C. C. Moore & Co. Engr., 417 Smith Tower. MA 1496

**DE VILBIS CO., THE,** 300 Phillips Ave., Toledo 1, Ohio

Air compressors (portable, stationary), Hose (air), Regulators (pressure).

**Branch Offices**  
Calif., Los Angeles—6511 E. Slauson Ave. RA 3-6307  
Calif., San Jose—1335 N. Tenth St. CY 7-1820

**DIAMOND CHAIN CO., INC.,** 402 Kentucky Ave., Indianapolis 7, Ind.  
Chains for drives (detachable link, roller), Couplings (shaft), Sprockets.

See advertisement on page 25

**Branch Offices**  
Calif., Los Angeles—900 Santa Fe Ave. VA 1723  
Calif., Menlo Park (San Francisco)—595 Santa Cruz, P. O. Box 218. DA 3-4940

**Representatives**  
Ariz., Flagstaff—Semon Industrial & Welding Supply Co., 27 Mike's Pike  
Ariz., Phoenix—Semon Bearing & Supply, 825 No. 3rd Ave. AL 8-7556  
Ariz., Tucson—Tucson Bearing Co., Inc., 527 No. Stone Ave. Phone 3-3618  
Calif., Arcata—Reliable Hardware Co., Inc., 11th & M Sts. VA 2-0378  
Calif., Bakersfield—Power Transmission Equipment, 109 Twenty-third. Phone 5-8601  
Calif., Fresno—Pacific Mill & Mine Supply, 530 Van Ness Ave. Phone 4-5924  
Calif., Los Angeles—Degen Fiege, 4559 E. Sheila St. RI 8-2281  
Calif., Los Angeles (South Gate)—Power Transmission Equipment, 4501 Firestone. LO 4-2551  
Calif., Sacramento—Western Industrial Supply Co., 905 G St. GI 2-7264  
Calif., San Diego—Kenton Equipment Co., 1895 Main St. BE 9-5171  
Calif., San Francisco—Horsford Bros., 944 Folsom St. SU 1-0657  
Calif., San Francisco—Monarch Corp. (Supply Div.), 55 New Montgomery. GA 1-7724  
Calif., San Leandro—Monarch Corp. (Supply Div.), 2075 Williams. SW 8-0980  
Calif., Santa Clara—Monarch Corp. (Supply Div.), 2455 The Alameda. AX 6-1025  
Calif., Stockton—Hickbotham Bros., Ltd., 536 So. Aurora. HO 6-9541  
Colo., Denver—Colorado Bearing Co., 1618 Wazee St. MA 3-1218  
Ida., Boise—Idaho Chain & Sprocket, Inc., 2400 Warm Springs. Phone 3-8392  
Ida., Pocatello—Pocatello Chain & Sprocket, 2703 Pole Line Rd. Phone 5401  
Mont., Billings—Great Northern Tool & Supply Co., 2224 Minnesota Ave.  
Mont., Billings—Power Transmission Equipment Co., P.O. Box 983. Phone 4-4185  
Mont., Cutbank—Great Northern Tool & Supply Co.  
Mont., Kevin—Great Northern Tool & Supply Co.

N. Mex., Albuquerque—Harry Cornelius Co., 1510 Second St. N.W. Phone 3-1776  
Ore., Eugene—Bearing Sales & Service, Inc., 225 7th Ave. W. DI 5-0325  
Ore., Portland—Bearing Sales & Service, Inc., 1645 N.W. Hoyt St.  
Ore., Portland—Woodbury & Co., 5851 No. Lagoon. CA 8-6641  
Ore., Roseburg—Bearing Sales & Service, Inc., 460 N.E. Garden Valley Rd.  
Utah, Salt Lake City—Utah Sprocket & Machinery Co., 717 So. 4th W. EL 5-8811  
Wash., Aberdeen—Mill & Logging Supply Co., 313 So. H St.  
Wash., Everett—Washington Belting & Rubber Co., 2923 Grand Ave. CE 3111  
Wash., Longview—Bearing Sales & Service, 743 Commerce Ave. HA 5-1850  
Wash., Seattle—Washington Belting & Rubber Co., 2763 First Ave. So. EL 5650  
Wash., Tacoma—Washington Belting & Rubber Co., 672 E. 11th St. MA 8158  
Wyo., Casper—Great Northern Tool & Supply Co., 333 W. Midwest Ave.  
Wyo., Casper—Power Service, Inc., 255 So. Ash St.

**DICK, R & J, CO., INC.,** P.O. Box 388, Passaic, N. J.

Bearings (babbitted), Belting, drive (chain or link, composition), Belts (timing), Belts, V (rubber), Chains for drives (roller), Collars (shaft), Couplings (shaft), Pulleys, Sheaves, Sprockets, Variable Speed transmission.

See advertisement on page 106

**Branch Offices**  
Calif., Los Angeles—6276 Atlantic Blvd. LU 3-4014  
Calif., San Francisco—510 Bryant St. SU 1-1341  
Wash., Seattle—911 Western Ave. MU 1922

**Representatives**  
(Contact Los Angeles, San Francisco or Seattle branches for any information.)

**Diehl Manufacturing Co.,** 1209 Finner Ave., Somerville, N. J.

Electric motors, Electric fans, Servomotors, Resolvers.

**Branch Office**  
Calif., Los Angeles—808 So. Broadway TR 7863 (motors for electronic equipment only)

**Representatives**  
Calif., Los Angeles—Keeler, White Co., 436 Colyton St. MU 6279

Calif., Pasadena—Luscombe Eng. Co., 17 W. California St. RY 1-5556

Calif., San Francisco—Keeler, White Co., 615 Seventh St. HE 1-2900

Colo., Denver—A. J. Nelson Co., 1639 Blake St. KE 4-6751

Colo., Denver—Spicer-Lindsay Assoc., 2475 W. 26th Ave. GR 7-1247

Ore., Portland—Keeler, White Co., 322 N.W. 4th Ave. CA 7-0593

Wash., Seattle—Keeler, White Co., 1041 Sixth Ave. So. EL 2367

**DILLON, W. C., & CO., INC.,** 14620 Keswick St., Van Nuys, Calif. ST 7-8586

Dynamometers (traction type for wire tensioning), Scales (suspension type), Thermometers (dial type, bi-metallic).

**DODGE MANUFACTURING CORP.,** 500 So. Union St., Mishawaka, Ind.  
Power transmission machinery (bearings, clutches, couplings, V-belt drives, chain drives, fluid drives, pulleys, speed reducers, sprockets, sheaves), Collars (shaft), Pillow blocks.

See advertisements on pages 80, 81

**Branch Offices**  
Calif., Rivers—7744 So. Industry Avenue. RA 3-5621  
Calif., San Francisco—55 New Montgomery. DO 2-8434

**Representatives**  
Calif., Berkeley—L. O. Carroll, 648 Alvarado. AS 3-6448

Calif., Pasadena—R. C. Kingsbury, 1885 E. Mountain St. SY 4-9751

Calif., Pleasant Hill—M. K. Hendrickson, 535 Shelly St. MU 5-6726

Colo., Denver—Donald Leekey, 1483 So. Eudora. SK 6-5347

Ore., Oswego—Marion Studebaker, 1011 Bayberry Rd. NE 6-5081

**DOERR ELECTRIC CORP.,** 510 No. Fourth Ave., Cedarburg, Wis.  
Electric motors, Variable speed drives.

**Representatives**  
 Calif., Alhambra—Cox Sales & Engineering,  
 1819 W. Valley Blvd. CU 3-2351  
 Calif., San Francisco—Engineering Sales Co.,  
 55 New Montgomery St. GA 1-7724  
 Ore., Portland—Donal Co., P. O. Box 7013. CA  
 2-4343  
 Wash., Seattle—Casskey Engineering, 2200 First  
 Ave. So. MA 4073

**DRESSER INDUSTRIES, see ROOTS-  
 CONNERSVILLE BLOWER DIV.**

**DUKES CO., INC., 3999 No. 25th  
 Ave., Schiller Park, Ill.**

**Hydraulic cylinders, Valves and couplers.**

**Representatives**  
 Calif., San Francisco—Power-Mac Corp., 467  
 So. Van Ness  
 Ore., Portland—Hydraulic & Air Equipment  
 Co., 2316 N.W. Savier St.  
 Utah, Salt Lake City—Stearn Engr. Supply,  
 1359 So. Main St.

**DURAMETALLIC CORP., Factory St.,  
 Kalamazoo, Mich.**

**Flexible metallic packings, mechanical seals.**

**Branch Office**  
 Calif., Los Angeles—49350 Olympic Blvd. AN  
 1-3165  
**Representatives**  
 Calif., San Francisco—Pacific Coast Rubber  
 Co., 51 Main St. EX 2-6963  
 Colo., Denver—Gunderson-Taylor Machinery  
 Co., 1237 Shoshone St. TA 5-1327  
 Ore., Portland—Misco, Inc., 907 W. Irving  
 CA 9981  
 Utah, Salt Lake City—Bullough Asbestos Sup-  
 ply Co., 764 W. Second So. St. Phone 5-8463  
 Wash., Seattle—Marine & Industrial Supply  
 Corp., Pier No. 50. SE 6926

**DURKEE-ATWOOD CO., 215 7th St.  
 N.E., Minneapolis 13, Minn.**

**Belting, drive (rubber), Belts, V (composition, rub-  
 ber), Rubber products (industrial), Sheaves.**

**Branch Offices**  
 Calif., Los Angeles—5788 Holmes Ave. RI  
 8-7795  
 Calif., Oakland—2201 West St. TE 2-3818  
 Calif., Sacramento—2632 Rochon Way  
**Representatives**  
 Ariz., Phoenix—Edward D. Maltby Co., 424 W.  
 Jefferson  
 Calif., Berkeley—Berkeley Industrial Supply,  
 1003-5 Pardee St.  
 Calif., Eureka—Bearing Transmission Pro-  
 ducts, Fifth & B Sts.  
 Calif., Fresno—Central Supply Co., 424 M St.  
 Calif., Lodi—Gundershaugh Electric Co., 130  
 No. Sacramento St.  
 Calif., Los Angeles—B-B Supply Co., 2126 So.  
 Atlantic Blvd.  
 Calif., Los Angeles—Edward D. Maltby Co.,  
 1718 So. Flower St. RI 7-9191  
 Calif., Los Angeles—Metropolitan Supply Co.,  
 353 E. Second St.  
 Calif., Los Angeles—Utilities Supply Co., 1736  
 E. 15th St.  
 Calif., Maywood—Edward D. Maltby Co., 4035  
 E. 52nd St. LO 5-5304  
 Calif., No. Hollywood—General Industrial Tool  
 & Supply, 12517 Sherman Way  
 Calif., Oakland—Bearing Engineering Co., 1019  
 Harrison St.  
 Calif., Oakland—Cypress Steel & Equipment  
 Co., 1829 Cypress St.  
 Calif., Oakland—Otrich Co., 610 16th St.  
 Calif., Sacramento—Rubber Products Co., 2513  
 Broadway  
 Calif., Sacramento—Western Industrial Sup-  
 ply, 905 G St.  
 Calif., Salinas—Girardi Bearing Service, 267  
 John St.  
 Calif., San Diego—Edward D. Maltby Co., 745  
 15th St.  
 Calif., San Francisco—Bearing Specialty Co.,  
 128 Texas St. HE 1-4140  
 Calif., San Francisco—Ralphs-Pugh Co., Inc.,  
 530 Howard St.  
 Calif., San Jose—Bearings & Equipment, 60  
 So. San Pedro  
 Calif., Santa Rosa—Santa Rosa Bearing Co.  
 Colo., Grand Junction—Pacific Western Ind.  
 Supply Co., P.O. Box 118  
 Nev., Fallon—Motor Supply Co., P.O. Box 712  
 Nev., Reno—Sanford Tractor Co., No. Valley  
 Road  
 N. Mex., Albuquerque—Montezuma Bearing  
 Service, 1413 First N.W.  
 Ore., Portland—Berg Evans Chain Co., 240  
 S.W. First Ave.  
 Utah, Salt Lake City—Schieren Jarvis, 320  
 Dooley Bldg.  
 Wash., Seattle—Bearing Engr. Supply Co.,  
 2548 Airport Way

**DYNAMATIC DIV., EATON MANU-  
 FACTURING CO., 3307 14th Ave.,  
 Kenosha, Wis.**

**Adjustable speed eddy-current rotating equipment  
 including: Couplings (air and liquid cooled), Brakes  
 (air and liquid cooled), Drives (Adjust-Speed, Dyno-  
 speed), Dynamometers (absorption, motoring, uni-  
 versal), Amplifier controls (electronic, magnetic),  
 Clutches, Motors (variable speed), Transmission  
 (variable speed), Magnetic disc-type clutches and  
 brakes.**

**Representatives**  
 Calif., Pasadena—Shaw Engineering Sales Co.,  
 P.O. Box 590. TU 3061  
 Calif., San Francisco—Engineering Sales Co.,  
 277 Pennsylvania Ave. MA 1-8069  
 Colo., Denver—G. M. Wallace & Co., 313 Den-  
 ham Bldg. AM 6-0386  
 Ore., Portland—Donal Co., P.O. Box 7013. CA  
 2-4343  
 Utah, Salt Lake City—G. M. Wallace & Co.,  
 Continental Bank Bldg., Second So. and  
 Main St. EM 4-5611  
 Wash., Seattle—Casskey Engineering Co., 1736  
 First Ave. So. MA 4073

**EASTMAN PACIFIC CO., 2320 E. 8th,  
 Los Angeles 21, Calif. TR 6317**

**Fittings and couplings (air, hydraulic), Hose (air,  
 hydraulic).**

**Representatives**  
 Ariz., Phoenix—Air-Draulics, 3135 No. 29th  
 Ave. AL 4-4073  
 Calif., San Mateo—Eastman Pacific, 60 E. 40th  
 St. FI 1-3364  
 Utah, Salt Lake City—Eimco Corp., 634 So.  
 Fourth W. EM 3-7634

**EATON MANUFACTURING CO., see  
 DYNAMATIC DIV.**

**ECONOMY FUSE & MANUFACTUR-  
 ING CO., 2717 N. Greenview Ave.,  
 Chicago 14, Ill.**

**Fuses.**

**Branch Offices**  
 Calif., Los Angeles—5100 Ambrose Ave. NO  
 4-6271  
 Calif., San Francisco—780 Natoma St. HE  
 1-4069  
 Ore., Portland—P.O. Box 766. AT 4-6234  
 Utah, Salt Lake City—1481 So. Main St. Phone  
 84-1133  
 Wash., Edmonds—9810 238th S.W. PL 9908

**ELECTRIC CONTROLLER & MFG. CO.,  
 see SQUARE D CO., EC&M DIV.**

**ELECTRIC STORAGE BATTERY CO.,  
 THE, 42 So. 15th St., Philadelphia  
 2, Pa.**

**Exide-Ironclad, Exide-Monarch, and Exide-Tylox  
 batteries.**

**Branch Offices**  
 Ariz., Phoenix—Room 204, 916 W. Adams St.  
 AL 4-0851  
 Calif., Los Angeles—1043 So. Grand Ave. RI  
 9-4436  
 Calif., San Francisco—6150 Third St. MI 7-3100  
 Colo., Denver—234 Commonwealth Bldg. MA  
 3-7793  
 Utah, Salt Lake City—P.O. Box 133, Murray  
 Branch. EL 9-5766  
 Wash., Seattle—500 Wall St. EL 1377

**ELECTRIX TERMINALS & CONNec-  
 TORS, INC., 990 E. 67th St., Cleve-  
 land 3, Ohio**

**Solderless terminals, Lugs, Connectors.**

**Representatives**  
 Calif., Pasadena—Arvin Bell Co., 385 E. Green  
 St. RY 1-0491  
 Calif., San Francisco—C. M. Salisbury &  
 Assoc., 1453 Seventh Ave. LO 6-8160  
 Ore., Portland—Pacific Electric Sales Co., 140  
 S.E. 28th Ave. BE 5-4137

**ELECTRO-DEVICES, INC., 4-6 God-  
 win Ave., Paterson, N. J.**

**Variable speed motor control systems.**

**Representative**  
 Calif., Los Angeles—Minarik Electric Co., 224  
 E. Third St. MI 3161

**ELECTRO-MECHANO CO., 261 E.  
 Erie St., Milwaukee 2, Wis.**

**Hand-portable tachometers.**

**Representative**  
 Calif., Los Angeles—Instrument Laboratory,  
 1836 W. Florence Ave.

## DRESSER-EXTREMULTUS

**ELECTRO-NITE CARBON CO., 8601  
 Torresdale Ave., Philadelphia 36,  
 Pa.**

**Graphite bearings, Graphite bushed pillow blocks  
 and sheaves, Turbine rings, Piston rings, Seals.**

**Representative**  
 Calif., Los Angeles—Acme Ring Co., 2417 E.  
 57th St. LU 8-3522

**ELECTRO PRODUCTS LABORATO-  
 RIES, INC., 4501 No. Ravenswood  
 Ave., Chicago 40, Ill.**

**Transducers for automatic control and counting, Rec-  
 tifiers (low-voltage, d-c. power supplies).**

**Representatives**  
 Power Supplies  
 Calif., Los Angeles—E. V. Roberts & Associ-  
 ates, 5068 W. Washington Blvd. WE 8-2541  
 Transducers  
 Calif., Los Angeles—King Engineering Co.,  
 3931 Prospect Ave. NO 1-0142

**ELECTRO SNAP SWITCH & MANU-  
 FACTURING CO., 4218 W. Lake St.,  
 Chicago 24, Ill.**

**Switches (electric).**

**Representatives**  
 Ariz., Tucson—Standard Parts, 218 N. First St.  
 Ariz., Tucson—Tucson Electrical Supply, 523  
 E. Tenth St.  
 Calif., Bell—Bell Wholesale Elec. Co., 4346 E.  
 Gage  
 Calif., Beverly Hills—Davis Mfg. Co., P. O.  
 Box 311  
 Calif., Encino—G. W. Ledbetter Co., 16618  
 Ventura Blvd. ST 9-8115  
 Calif., Los Angeles—H. G. Rising, National  
 Parts Dist.  
 Calif., San Francisco—Belilove Co., 420 Market  
 St. YU 2-3713  
 Colo., Denver—Denver Electronic Supply  
 Colo., Denver—Fred Pease, 209 Terminal Bldg.,  
 Stapleton Airfield  
 Colo., Denver—H. G. Rising, National Parts  
 Dist.  
 Wash., Seattle—G. E. Harris & Co., 444 Dex-  
 ter Horton Bldg. SE 1673

**ELLIOTT MFG. CO., 350 State St.,  
 Binghamton, N. Y.**

**Flexible shafting.**

**Representative**  
 Calif., Los Angeles—F. Somers Peterson, 1501  
 Maple Ave. RI 9-6151  
 Calif., San Francisco—F. Somers Peterson,  
 157 13th St. MA 1-2255

**EMERSON MANUFACTURING CO.,  
 THE, 9 Osquad St., Lawrence, Mass.**

**Beater rolls, Controls (compressed air), Couplings  
 (shaft), Engines, Plugs, Separators (magnetic), Suc-  
 tion box covers, Traps (magnetic).**

**Representatives**  
 Calif., Piedmont—O. E. Larson, 199 Lake Ave.  
 OL 5-2291  
 Ore., Portland—J. F. Crook, c/o New Heath-  
 man Hotel

**ENTERPRISE ENGINE & MACHINERY  
 CO., Subsidiary of GENERAL MET-  
 ALS CORP., 18th & Florida Sts., San  
 Francisco 10, Calif. MI 7-0862**

**Engines, Generators (electric).**

**Branch Offices**  
 Calif., Burbank—10777 Van Owen. ST 7-2611  
 Wash., Seattle—2534 Westlake Ave., No. AL  
 1976

**EQUIPMENT ENGINEERING CO.,  
 2853 Columbus Ave., Minneapolis  
 7, Minn.**

**Variable speed pulleys (Sheaves) and motor bases.**

**Representatives**  
 Calif., Los Angeles—Hollis Jewell Co., 5422 W.  
 Washington Blvd. WE 3-7259  
 Calif., San Francisco—Hood Engr. Sales Co.,  
 1485 Bayshore Blvd.  
 Ore., Portland—W. G. Ballantyne Co., 103  
 S.W. Front Ave. CA 8-4311

**EXTREMULTUS, INC., 405 Lexington  
 Ave., New York 17, N. Y.**

**Power transmission beltng.**

**Representatives**  
 Calif., Monterey—W. Stanley Johnson, 117  
 Pearl St. FR 5-2164  
 Ore., Portland—Joseph Grumbo, 237 S.W. Front  
 Ave.



## FAFNIR - FORMSPRAG

**FAFNIR BEARING CO., THE, 37**  
Booth St., New Britain, Conn.  
Bearings (ball).

**Branch Offices**  
Calif., Los Angeles—2276 E. 16th. LU 1-6171  
Calif., San Francisco—255 Loomis St. MI 8-3090  
Colo., Denver—4425 Vine St. AL 6-1495  
Ore., Portland—1202 N.W. 17th Ave. CA 7-0147  
Wash., Seattle—605 Spokane St. MA 4141

**FAIRBANKS, MORSE & CO., 600 So.**  
Michigan Ave., Chicago 5, Ill.  
Engines (gas, diesel), Geomotors, Generators  
(electric, gasoline, diesel), Motors (electric, DC;  
electric, poly-phase and single-phase AC; variable  
speed), Pumps (turbine, centrifugal).

See advertisement on page 32

**Branch Offices**  
Calif., Fresno—2379 So. G St. Phone 6-8644  
Calif., Los Angeles—4035 So. Soto St. LU 7-  
8151  
Calif., San Francisco—630 Third St. EX  
2-5855  
Colo., Denver—4995 Colorado Blvd. FR 7-8845  
Ore., Portland—105 S.E. Taylor St. BE 2-0131  
Utah, Salt Lake City—153 W. 2nd South St.  
EM 3-2108  
Wash., Seattle—668 Lane St. MU 9450

**FAIRCHILD ENGINE & AIRPLANE**  
**CORP., SPECON DRIVES SECTION,**  
**INDUSTRIAL PRODUCTS BRANCH,**  
**STRATOS DIV., Rt. 109, West Bab-**  
**ylon, N. Y.**

Differential gear boxes, Variable speed drives.

**Representatives**  
Calif., Los Angeles—Wm. C. King, 2200 E. 27th  
St. LO 8-1781  
Calif., San Francisco—Adam Hill Co., 244  
Ninth St. MA 1-4137  
Ore., Portland—Wm. J. Cottrell & Associates,  
4000 S.W. Macadam Ave. AT 7228

**FALK CORP., THE, 3081 W. Canal**  
St., Milwaukee 1, Wis.

Motoreducers, Shaft mounted drives, Speed reducers,  
Couplings (shaft), Flexible high speed drives, Special  
gear drives, Single helical and herringbone  
gears, Marine propulsion drives, Castings (steel),  
Weldments.

See advertisement on page 143

**Branch Offices**  
Calif., Los Angeles—1068 So. Vail Ave. RI  
3-8466  
Colo., Denver—655 Broadway Bldg. AC 2-4707  
**Representatives**  
Calif., San Francisco—Transmission Engineer-  
ing Co., 53 Stevenson St. SU 1-4738  
Ore., Portland—Western Machinery Corp., 1035  
S.E. 9th Ave. BE 6-4117  
Wash., Seattle—A. T. Harris Co., 1500 West-  
lake No. AL 8460

**FEDERAL PACIFIC ELECTRIC CO., 50**  
Paris St., Newark 1, N. J.  
High and low voltage switchgear, Control and dis-  
tribution equipment.

**Branch Offices**  
Calif., Los Angeles—3333 San Fernando Rd.  
CL 7-8261  
Calif., San Francisco—5815 Third St. AT 2-0810  
Ore., Portland—1306 American Bank Bldg.  
BR 2695  
Wash., Seattle—1415 Elliott Ave. AL 7801  
**Representatives**  
Ariz., Phoenix—Randy Forsyth, P.O. Box 3676.  
AL 3-0927  
Ida., Boise—M. Swendsen, P.O. Box 156. Phone  
4-4971  
Mont., Butte—M & L Supply, 110 E. Front St.  
Phone 2-2372  
Texas, El Paso—Electrical Engr. & Sales,  
2030 Texas St. Phone 3-6130  
Texas, El Paso—F. W. Gorman, Inc., 1701  
Texas St. Phone 3-7643  
Utah, Salt Lake City—J. E. Elggren, 428 S.W.  
Temple  
Utah, Salt Lake City—L. M. Slusser, 818 Dooly  
Block. EL 5-2322

**FEEDRAIL CORP., 125 Barclay St.,**  
New York 7, N. Y.

Trolley busway electrification systems.

**Representatives**  
Calif., Los Angeles—Allied Industries, 412  
Seaton St. MU 2244

Calif., San Francisco—Eichorn & Melchior,  
749 Bryant St. DO 2-1038  
Colo., Denver—Newell L. Willard Co., 3585  
Ivy St. EA 2-3227  
Wash., Seattle—E. A. Will, 534 First Ave. So.  
EL 2716

**FENWAL, INC., Pleasant St., Ash-**  
**land, Mass.**

Temperature controls of all types.

**Branch Office**  
Calif., Los Angeles—111 So. Burlington Ave.  
DU 8-3168  
**Representatives**  
Calif., San Francisco—Belllove Co., 420 Market  
St. TR 5-7244  
Colo., Denver—E & M Equipment Co., 2415  
15th St. GL 5-3651  
Ore., Portland—Wiant Products Co., 1231 N.W.  
Hoyt St. CA 7-2671  
Wash., Seattle—J. C. McDougall Co., 520  
First Ave. So. MA 7667

**FLATON MACHINE WORKS, INC.,**  
7829 So. Broadway, St. Louis 11,  
Mo.

Automatic safety clutches.

**Representatives**  
Calif., Los Angeles—Davis Material Handling  
Co., 5582 Alhambra Ave. CA 2-8197  
Calif., Oakland—Edward L. Parsons Co., 600  
16th St.  
Colo., Denver—Spicer-Lindsay Associates, 2475  
W. 26th Ave.

**FLICK-REEDY CORP., see MILLER**  
**FLUID POWER DIV.**

**FISCHER & PORTER CO., 580 War-**  
**minster Rd., Hatboro, Pa.**

Control centers, Controls (compressed air, electric,  
electric motor, hydraulic), Instruments, Panelboards,  
Valves (air power lines).

**Branch Offices**  
Calif., Anaheim—130 E. Orangethorpe Way,  
LA 6-7741  
Calif., Oakland—5010 Woodminster Lane. AN  
1-8704  
Colo., Denver—Rm. 210, 847 E. Colfax Ave.  
TA 5-6748  
Utah, Salt Lake City—211 So. Second W. EM  
4-6805  
Wash., Seattle—1000 4th Ave. So. MU 4442  
**Representative**  
Ariz., Tucson—Clyde F. Lewis, 2323 Aviation  
Hwy. TU 3-2493

**FISHER GOVERNOR CO., Marshall-**  
**town, Ia.**

Regulators (pressure).

**Representatives**  
Ariz., Phoenix—Cone & Wallace Co., 1325 So.  
26th St. BR 5-4496  
Calif., Los Angeles—Carter-Jones Co., 2334 E.  
8th St. TR 1867  
Calif., San Francisco—George R. Friederich &  
Co., 725 Tehama St. MA 1-3437  
Colo., Denver—Joy & Cox, Inc., 2124 Broadway.  
AM 6-0323  
Ore., Portland—R. H. Brown & Co., 5825 N.W.  
Front Ave. CA 7-1155  
Utah, Salt Lake City—Williams, Gritton &  
Wilde, 204 Dooly Bldg. Phone 4-6421  
Wash., Seattle—Power & Controls, Inc., 5505  
17th Av. N.W. HE 3819

**FLEXIBLE STEEL LACING CO., 4607**  
Lexington St., Chicago 44, Ill.  
Belt lacing, Belt lacing and repair equipment

See advertisement on page 98

**Representatives**  
(Sold through mill supply distributors, trans-  
mission supply houses, and belting manu-  
facturers in all areas of the West.)

**FLEXIBLE TUBING CORP., Guilford,**  
**Conn.**

Ducting (flexible, non-metallic).

**Branch Office**  
Calif., Los Angeles—12230 W. Olympic Blvd.  
**Representatives**  
Calif., Los Angeles—L. A. Rubber & Asbestos  
Works, Inc., 124 E. Third St.  
Calif., San Francisco—H. N. Cook Belting Co.,  
401 Howard St.  
Colo., Denver—Western Belting Co., Inc., 1720  
Wazee St.  
Colo., Grand Junction—Pacific & Western In-  
dustrial Supply Co., P.O. Box 345

Utah, Salt Lake City—Western Sales Engineer-  
ing Co., 375 S.W. Temple St.  
Wash., Seattle—Campbell Industrial Supply  
Co., 3433 Airport Way at Spokane St.  
Wash., Spokane—Nott-Atwater Co., So. 157  
Monroe St.

**FLEXONICS CORP., 1315 So. Third**  
**Ave., Maywood, Ill.**

Connectors (flexible, pop safety), Expansion joints,  
Expansion compensators.

**Branch Offices**  
Calif., Los Angeles—10711 Chandler Blvd. ST  
7-6210  
Calif., San Francisco—1485 Bayshore Blvd. DE  
3-0673

**Representatives**  
Calif., Los Angeles—Bushnell Controls St.  
Equipment Co., 5137 W. Jefferson Blvd. WE  
6-2149  
Calif., San Francisco—Transmission Engineer-  
ing Co., 53 Stevenson St. SU 1-4738  
Colo., Denver—Thermo Tech Products Co.,  
P.O. Box 4148 So. Denver. SP 7-4417  
Ida., Boise—Richardson Equipment Co., 612  
Front St. Phone 3-9481.  
Mont., Missoula—W. M. Walterskirchen, P.O.  
Box 1163. Phone 2-2885  
Ore., Portland—Forsyth-Constant Co., 921 S.W.  
Oak St. AT 6543  
N. Mex., Albuquerque—Boyd Industrial Engi-  
neering Co., 112 W. Granite St. Phone 3-2247  
Utah, Salt Lake City—Capitol City Steel Co.,  
324 W. 8th St. DA 2-3533  
Wash., Seattle—Arthur Forsyth Co., 2800 15th  
Ave. W. AL 5717

**FOOTE BROS. GEAR & MACHINE**  
**CORP., 4545 So. Western Blvd.,**  
**Chicago 9, Ill.**

Couplings (shaft), Geomotors, Gears (bevel, helical,  
spur, etc.), Gears (worm), Increasers (speed), Reduc-  
ers, speed (bevel gear, helical gear, planetary gear,  
shaft mounted, spur gear, worm gear), Power trans-  
mission equipment, Bases (motor).

**Branch Offices**  
Calif., South Gate—3529 Firestone Blvd. LO  
7-5891  
Colo., Denver—Hamilton Associates, 1236 Eliot  
St.

**Representatives**  
Ariz., Phoenix—Edward D. Maltby, Inc., 424  
W. Jefferson  
Calif., Long Beach—Edward D. Maltby, Inc.,  
2041 Anaheim Rd.  
Calif., Los Angeles—Edward D. Maltby, Inc.,  
1718 So. Flower St. RI 7-9191  
Calif., Maywood—Edward D. Maltby, Inc. 4035  
E. 52nd St. LO 5-5304  
Calif., San Diego—Edward D. Maltby, Inc., 745  
15th St.  
Calif., San Francisco—Chas. A. Fowler Co.,  
979 Bryant St.  
Colo., Denver—Union Supply Co., 5460 Colorado  
Bldg.  
N. Mex., Carlsbad—Carlsbad Supply Co.  
Ore., Portland—Power Transmission Products,  
1107 N.W. 14th Ave.  
Utah, Salt Lake City—National Equipment Co.,  
101 W. 2nd St. So.  
Wyo., Casper—Union Supply Co.

**FORMSPRAG CO., 23601 Hoover**  
**Rd., Van Dyke, Mich.**

Clutches for overrunning, indexing and backstop  
applications.

**Branch Office**  
Calif., Los Angeles—425 So. Western Ave.  
DU 2-0500  
**Distributors**  
Ariz., Phoenix—Semon Bearing & Supply Co.,  
325 No. Third Ave. AL 8-7566  
Calif., El Centro—Winn Supply Co., 254 E.  
Main St. EL 2-6460  
Calif., Fresno—Elliott Manufacturing Co., 1735  
Ventura St. Phone 3-6236  
Calif., Long Beach—Bay City Bearing Co., 709  
W. 16th St. HE 2-5485  
Calif., Los Angeles—Bearing Sales Co., 1950  
So. Olive St. RI 7-0161  
Calif., Maywood—Bay City Bearing Co., 5275  
Atlantic Blvd. LU 3-6041  
Calif., Oakland—Bay City Iron Works, 4th &  
Washington Sts. HI 4-1092  
Calif., Pomona—Reliable Bearing & Supply Co.,  
246 So. Towne LY 5-5007  
Calif., San Bernardino—Reliable Bearing &  
Supply Co., 263 So. E St. Phone 8-6565  
Calif., San Diego—Winn Supply Co., 254  
Seventh Ave. BE 3-3105  
Colo., Denver—Union Supply Co., Inc., 5460  
No. Colorado Blvd. AM 6-2292  
Ore., Portland—Western Machinery Corp.,  
1035 S.E. 9th Ave. EM 4117  
Wash., Aberdeen—Mill & Logging Supply Co.,  
313 So. H St.  
Wash., Seattle—Washington Belting & Rubber  
Co., 2763 First Ave. So. EL 5660



## FORT WAYNE DIV., see WEATHER-HEAD CO.

## FORT WORTH STEEL & MACHINERY CO., 3600 McCart St., Fort Worth 1, Tex.

Drives (roller chain, V-belt), Shafts, Sprockets.  
*Branch Offices*  
 Calif., Los Angeles—3026 E. Olympic Blvd. AN 3-6128  
 Calif., San Francisco—248 Ninth St. UN 3-3037  
 Colo., Denver—4975 Jackson St. FL 5-2294  
*Representatives*  
 Calif., Fresno—Geo. M. Philpott Co., 2376 Railroad Ave.  
 Calif., Huntington Park—Mechanical Drives, 2610 E. 54th St.  
 Calif., Long Beach—Power Pumps, 2480 E. Cherry Ave.  
 Calif., Los Angeles—Bearing Specialty Co., 225 W. 27th St.  
 Calif., San Francisco—Adam Hill Co., 244 Ninth St.  
 Calif., Stockton—Girardi Bearing, 148 E. Stockton St.  
 Colo., Denver—Power Transmission, 4970 Jackson St.  
 Colo., Grand Junction—Bearings & Power Transmission, 761 So. Seventh St.  
 N. Mex., Farmington—Justis Supply Co., 821 E. Main  
 Ore., Portland—Power Transmission, 1107 N.W. 14th Ave.  
 Wyo., Casper—Industrial Supply Div., Wyoming Automotive

## FOSTER WHEELER CORP., 165 Broadway, New York 6, N. Y.

Cooling towers for industrial and central station use, Generating units (steam), Steam condensing equipment.

*Branch Offices*  
 Calif., Los Angeles—714 W. Olympic Blvd. RI 9-7839  
 Calif., San Francisco—461 Market St. GA 1-6042  
 Calif., San Mateo—20 No. San Mateo Dr. DI 2-2061

## FOXBORO CO., THE, Foxboro, Mass.

Industrial instruments for the measurement and control of process variables such as conductivity, pressure, flow, temperature and dew point.

*Branch Offices*  
 Calif., Alhambra—1212 So. Garfield AT 1-0934, CU 3-6675  
 Calif., Los Angeles—2307 E. 8th St. TU 3815  
 Calif., San Leandro—399 Preda St. LO 2-5525  
*Representatives*  
 Colo., Denver—Peterson Co., 4049 Colorado Blvd. DE 3-5434  
 Ore., Portland—Bumstead-Woolford, 320 S.W. Stark St. CA 3-6886  
 Utah, Salt Lake City—Conely Engineering Co., 165 So. 1st W. St. EM 3-5013  
 Wash., Seattle—Bumstead-Woolford, 1411 Fourth Ave. EL 4915

## FRANKLIN ELECTRIC CO., INC., 400 E. Spring St., Bluffton, Ind.

Electric motors (fractional, integral, deep well, gear).

*Branch Office*  
 Calif., Los Angeles—8255 Beverly. HI 4-2525  
**FULLER CO., 124 Bridge St., Catsquaque, Pa.**

Air compressors (stationary), Bin signals, Compressors (rotary), Feeders, Coolers, Preheaters, Pumps (vacuum).

*Branch Offices*  
 Calif., Los Angeles—5225 Wilshire Blvd. WE 3-7126  
 Calif., San Francisco—564 Market St. YU 6-5486  
 Wash., Seattle—120 Sixth Ave. No. MU 3131  
*Representative*  
 Ariz., Tucson—Central Station Equipment Co., 2323 Aviation Highway. Phone 3-2493

## FULTON SYLPHON DIV., ROBERT-SHAW-FULTON CONTROLS CO., P. O. Box 400, Knoxville 1, Tenn.

Internal combustion engine controls, Shaft seals for compressors, fluid drives, aircraft, etc., Pressure regulators, Safety regulators for oil fired boilers, Automatic radiator valves, Pressure gauges.

*Branch Office*  
 Calif., Los Angeles—3101 Imperial Highway. NE 6-9791

*Representatives*  
 Ariz., Phoenix—John W. Ladlow, 680 Broadway. BR 6-2371  
 Calif., San Francisco—Norman Brown Co., 765 Minna St. UN 1-0144  
 Colo., Denver—Herman & Von Rosenberg, 1051 11th St. AC 2-2833

N. Mex., Albuquerque—Boyd Engineering Co., 112 W. Granite Ave. Phone 3-2247  
 Ore., Portland—Bert Farnes Co., 317 Bldrs. Exchange Bldg. CA 7-1766  
 Utah, Salt Lake City—Midgley-Huber Co., 44 W. Eighth South St. Phone 22-2537  
 Wash., Seattle—Heating Service Co., 314 Ninth Ave. No. MA 8660  
 Wash., Spokane—Frederick Co., W. 915 Mellon Ave. BR 1444

## FURNAS ELECTRIC CO., 1043 McKee St., Batavia, Ill.

Controls (electric motor)—magnetic starters, drum controllers, pressure switches, and pilot devices.

*Representatives*  
 Ariz., Phoenix—Southwest Sales Co., 1620 E. Earl Dr. CR 4-1331  
 Calif., Los Angeles—Ed Warburg Co., 1207 E. 8th St. TR 2981  
 Calif., San Francisco—John F. Cady Co., Sales Mart Bldg. JU 5-4108  
 Colo., Denver—Clyde P. Elliott, 661 Delaware St. AL 5-7988  
 Ore., Portland—Donal Co., P.O. Box 7013. CA 2-4343  
 Utah, Salt Lake City—J. Henry Jones Co., 120 Apricot Ave. Phone 5-4191  
 Wash., Seattle—Muth-Richards Co., 1304 Buss Pl. CA 2128

*Distributors*  
 Ariz., Phoenix—Daley Electric Co., 1825 E. Jefferson  
 Ariz., Phoenix—Hanson's Supply, 2310 W. McDowell  
 Ariz., Phoenix—State Equipment & Supply, 416 So. 7th Ave.  
 Ariz., Yuma—Daley Electric Co., 17 Second  
 Calif., Burbank—Coast Wholesale Electric Co., 2600 W. Magnolia  
 Calif., Inglewood—Inglewood Wholesale Co., 923 Prairie Ave.  
 Calif., Los Angeles—Burke Engineering Co., 1204 W. Washington  
 Calif., Los Angeles—Main Electric Supply Co., 6709 So. Main St.  
 Calif., Los Angeles—Marshall Tool & Supply Co., 2850 E. Olympic  
 Calif., No. Hollywood—Cal-State Electric Co., 10711 Chandler Blvd.  
 Calif., Richmond—Pioneer Electric Co., 929 Chanslor Ave.  
 Calif., Sacramento—Shasta Distributors, 2001 Fulton Ave.  
 Calif., Sacramento—Superior Sales Co., 1725 19th St.  
 Calif., San Diego—California Electric Works, 424 8th St.  
 Calif., San Diego—Southwest Supply Co., 610 Eighth Ave.  
 Calif., San Francisco—Herning Co., 1178 Folsom St.  
 Calif., San Francisco—Phillips & Edwards, 265 Vermont St.  
 Calif., San Francisco—Refrigerator & Power Specialties, 380 Brannan St.  
 Calif., San Jose—San Jose Armature & Motor, 1002 So. 2nd St.  
 Calif., Stockton—Refrigerator & Power Specialties, 1258 No. Union St.  
 Colo., Denver—Consolidated Parts Distributors, 1075 Galapago St.  
 Colo., Denver—Hendrie & Bolthoff Co., 1635 17th St.  
 Colo., Denver—Union Supply Co., 5460 Colorado Blvd.  
 Nev., Las Vegas—Hank Electric Motor Service, 13 W. Charleston  
 N. Mex., Elunice—Gary Electric, P.O. Box 111  
 Ore., Portland—Platt Electric Supply, 1305 N.W. Davis St.  
 Ore., Portland—Star Machinery Co., 801 S.W. Front St.  
 Utah, Salt Lake City—Stuart Electric, 13 E. 15th St.  
 Wash., Seattle—Palmer Electric Co., 307 Westlake Ave.  
 Wash., Seattle—Star Machinery Co., 241 Lander St.  
 Wash., Spokane—Star Machinery Co., 415 E. Sprague Ave.  
 Wash., Tacoma—Demick Electric Supply, 2919 Alaska St.

## G & W ELECTRIC SPECIALTY CO., 3500 W. 127th St., Blue Island, Ill.

Cable accessories (high voltage), Switchgear equipment.

*Representatives*  
 Calif., Los Angeles—R. E. Cunningham & Son, 530 W. Sixth St.  
 Calif., San Francisco—C. E. Ingalls & Sons, 541 Monadnock Bldg.  
 Colo., Denver—H. C. Guire Co., 715 So. York  
 Hawaii, Honolulu—Honolulu Electric Products Co., P.O. Box 459  
 N. Mex., Albuquerque—Frank W. Gorman, c/o John Ridenbaugh, P.O. Box 743  
 Utah, Salt Lake City—Riter Engineering Co., Kearns Bldg.  
 Wash., Seattle—W. R. Hendrey Co., Smith Tower Bldg.

## GALLAND-HENNING NOPAK DIV., 2753 South 31st St., Milwaukee 46, Wis.

Cylinders (air and hydraulic, single and double acting), Control valves (air and hydraulic, 3 and 4 way; hand, foot, cam and solenoid operated), Special fluid power devices.

See advertisement on page 102

*Representatives*  
 Calif., Los Angeles—Willard Engineering Co., 2709 So. Hill St. RI 7-0538  
 Calif., San Francisco—Transmission Engineering Co., 53 Stevenson St. SU 1-4738  
 Colo., Denver—E. C. Wild Co., 695 So. Garfield St. SP 7-2852  
 Hawaii, Honolulu—Chapson Brothers, Ltd., 755 Sheridan St. Phone 9-2274  
 Ida., Lewiston—Jameson Machine Supply Co., Phone 3-4517  
 Mont., Missoula—Miller Machinery Co., Highway 93 So. P.O. Box 1496. Phone 9-2309  
 Ore., Medford—Cal-Ore Machinery Co., 1105 Court St. Phone 2-6155  
 Ore., Portland—Caldwell Machinery Co., 733 N.W. Glisan St. CA 6-3568  
 Wash., Seattle—E. C. Griffin Co., 539 1st Ave. So. EL 4216  
 Wash., Spokane—Western Machinery Co., No. 808 Division St. FA 7-1501

## GARDNER-DENVER, Front St., Quincy, Ill.

Air compressors (portable, stationary), Motors (air), Pumps (hydraulic power).

*Branch Offices*  
 Calif., Los Angeles—7654 E. Slauson Ave. RA 3-8711  
 Calif., San Francisco—811 Folsom St. EX 2-5747  
 Colo., Denver—1727 E. 39th Ave. KE 2-0181, AM 6-2772  
 Ida., Wallace—407 Seventh St. Phone 1139  
 Mont., Butte—215 E. Park St. Phone 2-2662  
 Utah, Salt Lake City—113 W. Second So. St. EM 4-3202  
 Wash., Seattle—615 Eighth Ave. So. SE 1115, -6, -7

## GATES RUBBER CO., THE, 999 So. Broadway, Denver 17, Colo.

Belts (flat, high speed, variable speed), Belts, V (rubber), Rubber hose (air, steam, hydraulic), Pulleys, Shafts.

*Branch Offices*  
 Calif., Los Angeles—2850 E. 46th St. LU 8-9221  
 Calif., San Francisco—242 Shaw Rd. PL 6-3711  
 Colo., Denver—999 So. Broadway. SH 4-1911  
 Ore., Portland—2551 N.W. 30th Ave. CA 2-9641  
 Wash., Seattle—3221 Western Ave. GA 3333  
*Representatives*  
 Calif., Los Angeles—Garrett Supply Co.  
 Calif., San Francisco—Darcoid Co. of Calif.  
 Colo., Denver—M. L. Foss, Inc.  
 Colo., Denver—Power Transmission, Inc.  
 Ida., Boise—Western Bearings, Inc.  
 Ore., Portland—R. C. Chamberlain Co.  
 Wash., Seattle—Campbell Industrial Supply Co.  
 Wash., Wala Wala—Morrison Supply Co.

## GEAR ENGINEERING & MFG. CO., INC., 2826 Norton Ave., Lynwood, Calif. NE 6-2664

Collars (shaft), Gears (bevel, helical, spur, etc.), Gears (worm), Shafts, Splines, Sprockets.

## GEDNEY ELECTRIC CO., RKO Building, Radio City, New York 20, N. Y.

Conduits and fittings (electric).

*Representatives*  
 Calif., Los Angeles—Rutkin Elec. Sales Corp., 935 Stanford Ave. TU 1224  
 Calif., San Francisco—Elchorn & Melchior, 749 Bryant St. DO 2-1038  
 Wash., Seattle—Sanderlin Co., 129 First Ave. W. MU 7777

## GENERAL CABLE CORP., 420 Lexington Ave., New York 17, N. Y.

Cables (communication, control, lighting, power, welding).

*Branch Offices*  
 Ariz., Phoenix—3316 E. Washington St.  
 Calif., Los Angeles—2906 Leonis Blvd.  
 Calif., San Diego—820 E. St.  
 Calif., San Francisco—185 Industrial St.  
 Colo., Denver—4201 E. 48th Ave.  
 Ore., Portland—2215 N.W. Quimby St.  
 Utah, Salt Lake City—22 Jeremy St.  
 Wash., Seattle—1137 W. Hanford St.

## GENERAL CONTROL-GROVER

### GENERAL CONTROL CO., INC., 1204 Soldiers Field Rd., Boston 34, Mass.

Control panels, switches (key, lever, foot, push-button, limit), Timers (electronic, synchronous motor).

**Branch Office**  
Calif., Los Angeles—3757 Wilshire Blvd. DU 8-7111

**Distributor**  
Calif., Los Angeles—Federated Purchaser, 11275 W. Olympic Blvd. BR 2-0831

### GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y.

Complete line of electric equipment.

**Branch Offices**  
Ariz., Phoenix—220 Luhrs Tower  
Ariz., Tucson—650 No. Sixth Ave.  
Calif., Fresno—407 Patterson Bldg.  
Calif., Los Angeles—212 No. Vignes St.  
Calif., Oakland—409 Thirteenth St.  
Calif., Riverside—3570 Ninth St.  
Calif., Sacramento—626 Forum Bldg.  
Calif., San Diego—1240 Seventh Ave.  
Calif., San Francisco—235 Montgomery St.  
Calif., San Jose—460 Park Ave.  
Calif., Stockton—11 So. San Joaquin St.  
Colo., Denver—650 Seventeenth St.  
Ida., Boise—1524 Idaho St.  
Mont., Billings—303 No. Broadway  
Mont., Butte—103 No. Wyoming St.  
N. Mex., Albuquerque—323 Third St., S.W.  
Ore., Eugene—1170 Pearl St.  
Ore., Medford—107 E. Main St.  
Ore., Portland—2929 N.W. 29th Ave.  
Utah, Salt Lake City—200 So. Main St.  
Wash., Pasco—824 W. Lewis St.  
Wash., Seattle—710 Second Ave.  
Wash., Spokane—So. 162 Post St.  
Wash., Tacoma—1019 Pacific Ave.  
Wash., Wenatchee—228 No. Wenatchee Ave.

### GENERAL ELECTRIC CO., CIRCUIT PROTECTIVE DEVICES DEPT., 41 Woodford Ave., Plainville, Conn.

Circuit breakers (molded case), switches (disconnect, open knife, safety), Panelboard component parts.

**Branch Offices**  
Calif., Los Angeles—2450 E. 23rd St. LU 3-6722  
Calif., Oakland—600 16th St. TE 2-0577  
Calif., Sacramento—Builders Exchange Bldg., 1331 T St. GI 3-6960  
Calif., San Francisco—555 Minnesota St. MA 1-1753  
N. Mex., Albuquerque—Rm. 218, El Cortez Bldg., 323 Third St. S.W. Phone 2-3551  
Utah, Salt Lake City—Rm. 212, 65 E. Fourth St. EM 3-9576  
Wash., Seattle—5000 E. Marginal Way. MO 4800  
Wash., Spokane—So. 162 Post St. TE 8-3621

### GENERAL ELECTRIC CO., CONSTRUCTION MATERIALS DIV., 1285 Boston Ave., Bridgeport 2, Conn.

Cables (bus drop, neon sign, street lighting, railway signal, control), Wire (aircraft, appliance, fixture, machine tool), Gasoline-resistant, magnetic, remote control).

**Branch Offices**  
Calif., Los Angeles—3000 E. 46th St. LU 2-8211  
Calif., San Francisco—870 Market St. DO 2-3740  
Colo., Englewood—3385 So. Bannock St. SU 1-5707  
Utah, Salt Lake City—200 So. Main St. EM 4-1891  
Wash., Seattle—220 Dawson St. RA 6176  
Wash., Spokane—So. 162 Post St. TE 8-3621

### GENERAL METALS CORP., see ADEL PRECISION PRODUCTS DIV. and ENTERPRISE ENGINE & MACHINERY CO.

### GENERAL MOTORS CORP., see DELCO-REMY DIV., NEW DEPARTURE DIV., and DETROIT DIESEL ENGINE DIV.

### GERBING MANUFACTURING CORP., 11800 Milwaukee Ave., Northbrook, Ill.

Couplings (flexible shaft), Motor bases (adjustable), Motor drives (mechanical, variable speed), Pulleys (variable speed), Sheaves (standard and counter-shaft V-groove).

**Representatives**  
Ariz., Phoenix—Southwest Sales Co., 1620 E. Earl Dr.  
Ariz., Phoenix—Edward D. Maltby Co., 244 W. Jefferson St.

Calif., Fresno—Commercial Manufacturing & Supply Co., 2432 Railroad Ave.  
Calif., Los Angeles—Edward D. Maltby Co., 1718 So. Flower St. RI 7-9191

Calif., Los Angeles—J. W. Minder Chain & Gear Co., 6011 So. Central Ave. AD 3-7221  
Calif., Maywood—Edward D. Maltby Co., 4085 E. 52nd St. LO 5-5304

Calif., San Diego—Edward D. Maltby Co., 745 Fifteenth St.  
Calif., San Francisco—Monarch Corp., 277 Pennsylvania Ave.

Calif., San Leandro—Monarch Corp., 2075 Williams St. SW 8-0980  
Calif., Santa Clara—Monarch Corp., 2455 The Alameda

Calif., San Bernardino—Reliable Bearing & Supply Co., 263 So. E St.  
Ore., Portland—J. W. Minder Chain & Gear Co., 307 S.E. Hawthorne Blvd. BE 6-1131

Ore., Portland—Western Machinery Co., 1035 S.E. Ninth Ave. BE 6-4117  
Utah, Ogden—Bearing Engineering of Ogden, 1670 Washington Blvd.

Utah, Salt Lake City—Bearing Engineering & Sales Co., 756 So. Second St. W.  
Wash., Spokane—Bitco, Inc., E. 2920-28 Trent Wash., Tacoma—DuCharme Belting & Rubber Co., 501 E. 24th St.

Wash., Walla Walla—Morrison Supply Co., 217-225 E. Alder St.  
Wash., Yakima—Dodge Yakima Supply Co., 109 Front St.

### GLEASON-AVERY, INC., 45 Aurelius Ave., Auburn, N. Y.

Small e-c. timing and instrument motors.

**Representatives**  
Ariz., Phoenix—H. George Sheffer Co., P. O. Box 1587, AL 8-7893  
Calif., Anaheim—R. S. Hopkins Co., 112 W. Broadway. KE 5-1912

### GOODALL RUBBER CO., Whitehead Rd., Trenton 4, N. J.

Belting, Hoses, Packing, Plastic pipe, Protective coatings, Complete line of mechanical rubber goods.

See advertisement on page 84

**Branch Offices**  
Calif., Los Angeles—2939 E. 11th. AN 3-6728  
Calif., South San Francisco—221 E. Grand Ave. FL 6-5466  
Colo., Denver—1033 Santa Fe. KE 4-8285  
Ore., Portland—1111 N.W. 16th Ave. CA 7-1258  
Utah, Salt Lake City—631 So. 2nd W. EL 5-7487  
Wash., Seattle—1701 4th Ave. So. MA 8527  
Wash., Spokane—Paulsen Bldg. MA 8131

### GOODRICH, B. F., CO., THE, 500 So. Main St., Akron, Ohio

Air hose, Hydraulic control hose (all types industrial hose), Packing, Power transmission belting, V-belts.

**Branch Offices**  
Ariz., Phoenix—1345 No. 22nd Ave. AL 8-6851  
Calif., Los Angeles—3525 Garfield Ave. RA 3-6092  
Calif., San Francisco—1950 Army St. AT 2-9620  
Colo., Denver—2500 W. 8th Ave. TA 1267  
Utah, Salt Lake City—651 W. 6th St. DA 2-2405  
Wash., Seattle—1 Hanford St. MU 4300

**Distributors**  
Calif., El Centro—W. H. Douthitt Co.  
Calif., Los Angeles—C. R. Davis Co., 422 E. 3rd St.

Calif., Los Angeles—Howard Supply Co., 5125 Santa Fe Ave.  
Calif., Sacramento—Sacramento Rubber Co.

Calif., San Diego—Southern Equipment & Supply Co., 2025 E. Harbor Drive  
Calif., San Francisco—Hercules Equipment & Rubber Co., 455 Brannan St.

Calif., Santa Maria—The Bearing House  
Calif., Stockton—Delta Rubber & Supply Co.  
Colo., Denver—A. J. Philpott Co., 1816 California. AL 6-0550

Nev., Las Vegas—Inland Service & Supply Co., 300 W. Wyoming St.  
Nev., Reno—Sierra Machinery Co.

Ore., Portland—Empire Rubber & Supply Co., 1720 N.W. Marshall St.  
Ore., Portland—General Rubber & Supply, 101 S.W. First Ave. AT 6565

Ore., Salem—Mill Supply Corp., 330 So. Church, Phone 2-6959  
Utah, Salt Lake City—Salt Lake Hardware Co., 105 No. Third West St. Phone 3-5771

Wash., Seattle—Nebur Supply Co., 3000 West-ern. MA 6292  
Wash., Spokane—Coatings, Inc., N. 218-220 Browne. Phone MA 5188  
Wash., Tacoma—Industrial Rubber & Supply, 301 Puyallup Ave. BR 3244

### GOODYEAR TIRE & RUBBER CO., 1144 E. Market St., Akron 16, Ohio

Belting, Hoses, Molded-extruded goods, Rubber covered rolls, V-belts.

**Branch Offices**  
Calif., Los Angeles—6666 E. Washington Blvd. RA 3-3611  
Calif., San Francisco—1717 Harrison St. UN 1-8773

Colo., Denver—1207 Wazee St. CH 4-5465-66  
Ore., Portland—2720 N.W. 35th Ave. CA 6-2951  
Utah, Salt Lake City—46 Fayette Ave. EM 4-4387

**Representatives**  
Calif., Los Angeles—Republic Supply Co. of California, 2600 So. Eastland Ave. RA 3-2511  
Calif., San Leandro—Republic Supply Co. of California, 1919 Williams St. LO 2-0414

Colo., Denver—Union Supply Co., 5460 Colorado Blvd. AL 5-2091  
Ore., Portland—Breeze Supply Co., 237 S.W. Front Ave. CA 7-5447

**GOULD-NATIONAL BATTERIES, INC., INDUSTRIAL DIV., Trenton, N. J.**

**Batteries.**

**Branch Offices**  
Ariz., Phoenix—1007 Grand Ave. AL 2-5183  
Calif., Los Angeles (La Puente)—14500 Nelson Ave. ED 6-4571  
Calif., Oakland—1000 42nd St.  
Calif., San Francisco—244 Fremont St. YU 6-6933

Colo., Denver—4150 Fox St. GR 7-0187  
Ore., Portland—1973 N.W. Lovejoy St. CA 7-5150  
Utah, Salt Lake City—415 So. 2nd East. EL 5-6787

**GRAHAM TRANSMISSIONS, INC., Menomonee Falls, Wis.**

Variable speed transmissions.

**Representatives**  
Calif., Los Angeles—W. H. Del Mar Co., Inc., 3925 W. Slauson Ave. AX 3-5301  
Calif., Oakland—Ben W. Brundage Co., 4390 Piedmont Ave. OL 3-2882

Ore., Portland—Western Machinery Corp., 1035 S.E. Ninth Ave. EM 4117  
Wash., Seattle—Arthur T. Harris Co., 1500 Westlake No. AL 8460

### GRATON & KNIGHT CO., 356 Franklin St., Worcester 4, Mass.

Belting (leather, flat, round, V), Belting accessories (lacing, cement, dressing, etc.), Couplings (short, flexible), Packings (leather, mechanical).

**Branch Office**  
Calif., San Francisco—1219 Folsom St. MA 1-8429

**Representatives**  
Calif., Fresno—Pacific Mill & Mine, 530 Van Ness Ave.

Calif., Sacramento—Sacramento Rubber Co., 721-23 J St.  
Calif., San Francisco—Honolulu Iron Works, 215 Market St.

Ore., Portland—Harris Supply Co., 524 N.W. 14th Ave.  
Wash., Spokane—Washington Machinery & Supply Co., 9 W. Cataldo Ave.

### GREENE, TWEED & CO., North Wales, Pa.

Compounds (sealing), Couplings (round belt), Hammers (soft-faced), Packings (self-lubricating, molded, sheet), Wrenches (reversible).

**Representatives**  
Ore., Portland—Howard C. Josephson, 706 N. Page St. AT 4-2105  
Wash., Seattle—T. T. Watson Co., 508 Fifth Ave. So., SE 5279

**Distributors**  
Calif., Fresno—Pacific Mill & Mine Supply Co., Inc.

Calif., Los Angeles—Warren & Bailey Co.  
Calif., San Diego—Nuttall-Styris Co.

Calif., San Francisco—H. N. Cook Belting Co.  
Calif., San Pedro—C. J. Hendry Co.  
Colo., Denver—M. L. Foss, Inc.

Colo., Denver—Hendrie & Bolthoff Co.  
Hawaii, Honolulu—C. M. Lovsted & Co.  
Ore., Portland—Harris Supply Co.

Ore., Portland—Wall-Western, Inc.  
Utah, Salt Lake City—Mountain States Rubber Co., Inc.  
Wash., Seattle—Steam Supply & Rubber Co.

### GROVER SMITH MANUFACTURING CORP., 850 E. Valley Blvd., San Gabriel, Calif.

Air powered industrial pumps, Automotive service equipment and related items.

**Representatives**

Ariz., Phoenix—Norvin-Clark Equipment Co., 3010 N. 16th St. CR 7-0186  
 Calif., San Gabriel—Gresco, Inc., 848 E. Valley Blvd. AT 9-5284  
 Calif., San Francisco—Ben Eastman, 1080 Howard St. UN 1-7480  
 Ore., Portland—Henry Kals, 4023 No. Interstate. AT 7-9700  
 Wash., Seattle—Ditto Equipment Co., 6747 Empire Way. MO 9850

**GUARDIAN ELECTRIC MFG. CO.,**  
 1621 W. Walnut, Chicago 12, Ill.

Relays, Switches, Solenoids, Steppers, Complete control assemblies.

**Branch Offices**

Calif., Los Angeles—Roy E. Renz, 3130 So. Hill St. RI 7-3893  
 Calif., San Bruno—Bill Kolans & Co., 499 El Camino Real. JU 3-8363

**Representatives**

Calif., Glendale—R. V. Weatherford Co., 6921 San Fernando Rd. VI 9-2471  
 Calif., Oakland—Elmar Electronics, Inc., 140 11th St. HI 4-7011  
 Utah, Salt Lake City—Franklin Y. Gates, 822 Continental Bank Bldg. EL 9-1101  
 Wash., Seattle—Marsh Agencies, 2601 1st Ave. MA 8761

**HAGAN CHEMICALS & CONTROLS, INC.,**  
 Hagan Bldg., Pittsburgh 30, Pa.

Controls, Instruments, Regulators.

**Branch Offices**

Calif., Los Angeles—3040 Tweedy Blvd. LO 7-2384  
 Calif., San Francisco—200 Davis St. SU 1-7961  
 Colo., Denver—7550 W. 16th Ave. BE 7-2729  
 Ore., Portland—4803 S.E. 52nd Ave. PR 4-1667

**HANNA ENGINEERING WORKS,**  
 1767 Elston Ave., Chicago 22, Ill.

Controls (compressed air, hydraulic), Cylinders (air, hydraulic), Valves, speed control (air power line, hydraulic power line).

**Representatives**

Ariz., Phoenix—E. D. Flournoy Co., 106 E. Pierce St. AL 2-8607  
 Calif., Pasadena—E. D. Sweetland Co., 940 No. Fair Oaks Ave. RY 1-8157  
 Calif., San Francisco—E. D. Sweetland Co., 151 Mission St. GA 1-2665  
 Colo., Denver—Union Supply Co., 5460 Colorado Blvd. AM 6-2292  
 Ida., Wallace—Coeur d'Alene Hardware & Foundry Co., 612 Bank St.  
 N. Mex., Albuquerque—E. D. Flournoy Co., 217 Sixth St., S.W. Phone 3-1055  
 Ore., Portland—Power Transmission Products Div. of Portland Iron Works, 1107 N.W. 14th St. CA 7-1271  
 Utah, Salt Lake City—Galigher Co., 545 W. Eighth St. ST. EL 9-8731  
 Wash., Aberdeen—Industrial Electric Service Co., 319 So. I St. AB 956  
 Wash., Seattle—H. F. Soderling Co., 1729 First Ave. So. MA 6066

**HANNIFIN CORP.,** 501 So. Wolf Rd.,  
 Des Plaines, Ill.

Power cylinders (air, hydraulic), Air cylinder control valves, Hydraulic riving and punching equipment (portable, stationary), Presses (pneumatic, hydraulic), Air line filters, regulators and lubricators.

**Representatives**

Calif., Sherman Oaks—Castiglia Engineering Co., 14908 Ventura Blvd. ST 4-4409  
 Calif., South Gate—The Rucker Co., 4956 Firestone, LO 4-2521  
 Colo., Denver—Landes, Zachary & Peterson, 475 Kalamath St. MA 6208  
 Colo., Grand Junction—Landes, Zachary & Peterson  
 N. Mex., Albuquerque—Landes, Zachary & Peterson  
 Ore., Portland—Jack Ogle & Co., 2505 S.E. 11th Ave. BE 5-4080  
 Tex., El Paso—Landes, Zachary & Peterson  
 Utah, Salt Lake City—Landes, Zachary & Peterson, 153 1/2 W. 2nd South St. DA 2-0812  
 Wash., Seattle—Jack Ogle & Co., 105 Orcas St. MO 2030

**Distributors**

(For Crown line of air line filters, regulators and lubricators only.)  
 Calif., Emeryville—Rucker Co., 4700 San Pablo Ave. OL 3-5221  
 Calif., South Gate—Rucker Co., 4956 Firestone, LO 4-2521  
 Ore., Portland—Jack Ogle & Co., 2505 S.E. 11th Ave. BE 5-4080  
 Wash., Seattle—Jack Ogle & Co., 105 Orcas St. MO 2030

**HART REDUCTION PULLEY CO.,** 426  
 W. Main St., Waukesha, Wis.

Shaft-mounted speed reducers, single and two speed. Brakes, post type.

**Representatives**

Calif., Los Angeles—W. H. Del Mar Co., 3925 W. Slauson Ave. AX 3-5301  
 Calif., San Francisco—Hood Eng. Sales Co., 1485 Bayshore Blvd. DE 3-2827  
 Ore., Portland—McGuire Bearing Co., 222 N.W. Tenth Ave. CA 6-2678

**HARTFORD STEEL BALL CO., INC.,** 12  
 Jefferson Ave., West Hartford 6,  
 Conn.

Bearings (ball).

**Branch Office**

Calif., Goleta—Bldg. 117, Santa Barbara Airport. WO 8-8441

**Representatives**

Calif., Los Angeles—Edward D. Maltby Co., 1718 So. Flower St. RI 7-9191  
 Calif., San Francisco—George M. Philpott Co., 1060 Bryant St. HE 1-5475  
 Wash., Seattle—Bearing Engineering & Supply Co., 2548 Airport Way

**HARVEY HUBBELL, INC.,** State St.,  
 Bridgeport 2, Conn.

Electric switches.

**Branch Offices**

Calif., Los Angeles—103 No. Santa Fe Ave. MU 7226  
 Calif., San Francisco—1675 Hudson Ave. MI 7-3240  
 Colo., Denver—1645 Wazee St. KE 6798  
 Ore., Portland—202 Regal Bldg. AT 1990  
 Wash., Seattle—201 Eyres Bldg. EA 5522

**HELVIG CO.,** 2544 No. 30th St.,  
 Milwaukee 10, Wis.

Carbon brushes, Carbon products.

**Representatives**

Calif., Los Angeles—F. S. Fletcher, 4150 So. Main St. AD 3-5203  
 Calif., San Francisco—Advance Carbon & Elec., 2505 Mariposa St. HE 1-4034  
 Colo., Denver—M. G. Mueller, 1646 Blake St. CH 4-4425  
 Ore., Portland—H. E. Perkins, 317 N.W. Broadway. CA 7-3631  
 Utah, Salt Lake City—J. R. Christensen, 247 E. Fifth St. EM 3-4419  
 Wash., Seattle—J. E. Richardson, 166 Jackson St. EL 7133

**HEVI-DUTY ELECTRIC CO.,** 2040 W.  
 Wisconsin Ave., Milwaukee 1, Wis.

Transformers (dry type).

**Branch Office**

Calif., Culver City—10826 Venice Blvd. VE 7-1205

**HEWITT-ROBINS, INC.,** 666 Glen-  
 brook Rd., Stamford, Conn.

Beltting (composition, rubber), Couplings (shaft), Gears, Hoses, Pillow blocks, Pulleys, Speed reducers, Shafts.

**Branch Offices**

Ariz., Phoenix—207-B Camelback Rd. CR 4-0245  
 Calif., Los Angeles—2604 So. Malt Ave. RA 3-4771  
 Calif., San Francisco—1204 Russ Bldg. EX 2-4060  
 Colo., Denver—1324 19th St. AL 5-8765  
 Ore., Portland—2034 N.E. Sandy Blvd. BE 5-1996  
 Utah, Salt Lake City—545 W. 8th So. St. EL 9-8731  
 Wash., Seattle—441 Dexter Horton Bldg. MA 8640

**HILL TRANSFORMER CO., INC.,** 1030  
 Washington St., San Carlos, Calif.

Control transformers, specialty transformers, distribution transformers, power transformers.

**Representatives**

Calif., Los Angeles—Maddox Sales Co., 914 E. Third St. MI 2306  
 Calif., San Francisco—Campbell & George Co., 1601 Cortland Ave. MI 8-1236  
 Ore., Portland—Wm. O. Proby & Assoc., 1308 N.W. Everett. CA 8-7261  
 Wash., Seattle—Wm. O. Proby & Assoc., P. O. Box 3744, Terminal Annex. EL 3483

**HILLIARD CORP., THE,** 100 W. Fourth  
 St., Elmira, N. Y.

Clutches.

**Representatives**

Ariz., Tucson—Central Station Equipment Co., 2528 Aviation Highway. Phone 5-2493

Calif., Los Angeles—Engineering Products Co., 1600 So. San Pedro St. RI 9-7044  
 Calif., San Francisco—Norman F. Coates, c/o Elder Co., 890 Seventh St. UN 1-5480  
 Colo., Denver—Andrew T. Lobel, 1700 Fifteenth St. MA 3221  
 Hawaii, Honolulu—American Factors, Ltd., P.O. Box 3230  
 Ore., Portland—Fred W. Carlson & Associates, 935 Northwest 12th Ave., Rm. 133. CA 8-3798  
 Utah, Salt Lake City—Sales Engineering Co., Inc., 526 W. 8th So. St. Phone 5-1162  
 Wash., Seattle—Fred W. Carlson, 1201 Dexter Ave. EL 6630

**HOBART BROTHERS, see MOTOR  
 GENERATOR CORP.**

**HOFFMAN ENGINEERING CORP.,**  
 Ninth and Tyler, Anoka, Minn.

Panel enclosures (to NEMA specs), Oil tight wire-way, Oil tight pushbutton enclosures, Oil tight (JIC) junction boxes.

**Branch Office**

Calif., Venice—1009 Penmar Ave. EX 9-8305

**Distributors**

Ariz., Phoenix—Graybar Electric Co., Inc., 434 W. Madison St.  
 Calif., Los Angeles—Electric Corp. of California, 200 So. Mission Rd.  
 Calif., Los Angeles—Graybar Electric Co., Inc., 210 Anderson St.  
 Calif., Oakland—Graybar Electric Co., Inc., 1911 Union St.  
 Calif., San Diego—Coast Electric Co., 744 G St.  
 Calif., San Francisco—Herning Co., 1178 Folsom St.  
 Colo., Denver—Ryall Electric Supply Co., 500 Lincoln St.  
 Colo., Pueblo—American Electric Co., 310 So. Main St.  
 Idaho—All Graybar Electric Companies  
 Mont., Billings—Glacier State Elec. Supply, 108 So. 27th St.  
 Mont., Billings—Montana Electric Supply, Monard Rd.  
 Mont., Great Falls—Glacier State Elec. Supply, 112 First Ave. So.  
 Ore., Portland—North Coast Electric Co., 625 N.W. Everett  
 Utah—All Graybar Electric Companies  
 Wash., Seattle—Graybar Electric Co., Inc., King and Occidental Sts.  
 Wash., Seattle—North Coast Electric Co., 171 Jackson St.  
 Wash., Spokane—Westinghouse Elec. Supply Co., No. 1023 Monroe St.  
 Wyo., Cheyenne—Frontier Electric Supply Co., 1013 E. Lincoln Way

**HOFFMAN SPECIALTY MFG. CORP.,**  
 1700 W. Tenth St., Indianapolis 7,  
 Ind.

Steam vent valves, Water vent valves, Steam traps, Pressure reducing valves, Temperature regulators, Condensation pumps, Vacuum pumps, Circulators, Y strainers.

**Representatives**

Calif., Los Angeles—F. J. Hearty Co., 714 W. Olympic Blvd. RI 7-0416  
 Calif., San Francisco—R. J. Fuite, 1070 Bryant. MA 1-7417  
 Colo., Denver—Edwin P. Cook Co., 1863 Wazee KE 4-2371  
 Ore., Portland—Larry Harrington Co., 1989 N.W. Lovejoy St. CA 3-4324

**HOSE ACCESSORIES CO., LE-HI  
 DIV.,** Lehigh Ave. and 17th St.,  
 Philadelphia, Pa.

Fittings and Couplings (air, hydraulic).

**Distributors**

Ariz., Tucson—Tucson Pipe & Supply Co., 195 So. Tyndall Ave.  
 Calif., Fresno—Central Supply Co., 424 M St.  
 Calif., Los Angeles—Coxwells, Inc., 2207 So. Main St.  
 Calif., San Francisco—Gilmore Steel & Supply Co., 840 Brannan St.  
 Calif., San Francisco—Hercules Equipment & Rubber Co., 435 Brannan St.  
 Colo., Denver—Midwest Rubber & Supply Co., 724 W. Colfax Ave.  
 Ore., Portland—Goodyear Rubber & Asbestos Co., 205 N.W. Fifth Ave.  
 Utah, Salt Lake City—Mountain States Rubber Co., 121-131 Social Hall Ave.  
 Wash., Aberdeen—Mill & Logging Supply Co., 313 So. H St.  
 Wash., Everett—Washington Belting & Rubber Co., 2923 Grand Ave.  
 Wash., Seattle—Washington Belting & Rubber Co., 2763 First Ave. So.  
 Wash., Spokane—Towne Equipment Co., No. 622 Monroe St.  
 Wash., Tacoma—Washington Belting & Rubber Co., 672 E. 11th St.



## HOUGHTON-JOHNSON BRONZE

**HOUGHTON, E. F., & CO.,** 303 West Lehigh Ave., Philadelphia 33, Pa.  
Leather drive belting, Hydraulic fluids, Packing, Cutting fluids, Lubricants.

*Branch Office*  
Calif., Los Angeles—2445 E. 26th St. LU 2-5242  
Calif., San Francisco—1500 Davidson Ave. VA 4-3207  
Ore., Portland—208 S.W. Stark St. CA 8-9211  
Wash., Seattle—4100 E. Marginal Way. MA 7961

**HOWARD INDUSTRIES, INC.,** 1760 State St., Racine, Wis.

Motors (electric d-c., electric poly-phase a-c., electric single-phase a-c., variable speed).  
*Branch Office*  
Calif., Los Angeles—942 S. LaBrea Ave. WE 8-2444

**HYDRAULIC PRESS MFG. CO., HYDRAULIC POWER DIV., A DIV. OF KOEHRING CO.,** Mount Gilead, Ohio  
Controls (hydraulic), Cylinders (air, hydraulic), Motors (hydraulic), Pumps (hydraulic power), Valves (hydraulic power line).

*Representatives*  
Ore., Portland—Power Transmission Products Div., Portland Iron Works, 1107 N.W. 14th Ave. BR 1271  
Wash., Seattle—Halliday Machinery Co., 210 Hudson St. LA 9520

**I-T-E CIRCUIT BREAKER CO.,** 19th and Hamilton Sts., Philadelphia 30, Pa.

Circuit breakers, Ducts (bus and wiring), Electro-clutches, Insulators (porcelain), Panelboards (electric), Power switching equipment, Metal-enclosed bus, Rectifiers (mechanical and germanium), Substations (unit), Switchgear equipment, Transformers.

*Branch Offices*  
Calif., Los Angeles—130 So. Atlantic Blvd., RA 3-5318  
Calif., San Francisco—116 New Montgomery St. YU 2-2760, -3397  
Colo., Denver—655 Broadway Bldg., Rm. 410. AM 6-1404

*Representatives*  
Ariz., Tucson—Central Station Equipment Co., 2323 Aviation Hwy. MA 3-2493  
Mont., Butte—R. E. McDonough Co., 829 Maryland Ave. Phone 2-5447  
Ore., Portland—Garland Affolter Engineering, 1233 N.W. 12th Ave. CA 2-7349  
Utah, Salt Lake City—Riter Engineering Co., 136 So. Main St. EM 3-7933  
Wash., Seattle—Garland Affolter Engineering, 2603 Western Ave. MU 4950

**ILLINOIS TOOL WORKS, see LICON SWITCH & CONTROL DIV.**

**IMPERIAL BRASS MFG. CO., THE,** 1200 W. Harrison St., Chicago 7, Ill.  
Fittings and couplings (air, hydraulic), Hose (air, hydraulic), Valves (air and hydraulic power line).

*Branch Offices*  
Calif., Los Angeles—1341 So. Hope St. RI 8-5646  
Calif., San Francisco—476 Golden Gate Ave. OR 3-1247

*Representatives*  
Ariz., Phoenix—Arizona Hardware Co., 1st & Jackson Sts.  
Ariz., Phoenix—Ducommun Metals & Supply Co., 2626 E. Washington St.  
Ariz., Phoenix—Garrett Supply Co., 130 W. Madison St.  
Ariz., Phoenix—Geo. S. Thomson Co., Inc.  
Ariz., Tucson—Arizona Hardware Co., 119 N. Stone Ave.  
Calif., Bakersfield—Tay-Holbrook, Inc., 3530 Chester Ave.  
Calif., Emeryville—Warren & Bailey Co., 1257 66th St.  
Calif., Eureka—Tay-Holbrook, Inc., 940 Bdwy.  
Calif., Fresno—Federal Pipe & Supply Co., Parallel and Butler Aves.  
Calif., Fresno—Tay-Holbrook, Inc., 920 M St.  
Calif., Long Beach—American Wholesale Hardware Co., 1500 W. Anaheim St.  
Calif., Los Angeles—Allied Supply Co., P.O. Box 2376 Terminal Annex  
Calif., Los Angeles—California Hardware Co., 500 E. First St.  
Calif., Los Angeles—Ducommun Metals & Supply Co., 4890 So. Alameda St.  
Calif., Los Angeles—Garrett Supply Co., 3844 Santa Fe  
Calif., Los Angeles—Keenan Pipe & Supply Co., 2112 E. 27th St.  
Calif., Los Angeles—Pacific Metals Co., Ltd., 2187 So. Garfield Ave.  
Calif., Los Angeles—Republic Supply Co., 2600 E. Eastland Ave.

Calif., Los Angeles—Ward Supply Co., 3800 E. Slauson Ave.  
Calif., Los Angeles—Warren & Bailey Co., 3528 So. Garfield Ave.  
Calif., National City—Ducommun Metals & Supply Co., 1300 Wilson Ave.  
Calif., Oakland—American Brass & Copper Co., 1920 Union St.  
Calif., Pasadena—E. D. Sweetland Co., 940 No. Fair Oaks  
Calif., Sacramento—Tay-Holbrook, Inc., 1801 22nd St.  
Calif., Salinas—Tay-Holbrook, Inc., 101 Highway South  
Calif., San Carlos—Tay-Holbrook, Inc., 605 Old County Road  
Calif., San Diego—Warren & Bailey Co., 266 Seventh Ave.  
Calif., San Francisco—Dallman Supply Co., 7th at Townsend  
Calif., San Francisco—A. J. Giesener Co., 975 Bryant St.  
Calif., San Francisco—Marshall-Newell Supply Co., Spear and Mission Sts.  
Calif., San Francisco—C. W. Marwedel, 1235 Mission St.  
Calif., San Francisco—Miller & Stern Supply Co., 1435 Folsom St.  
Calif., San Francisco—Pacific Metals Co., Ltd., 3100 Nineteenth St.  
Calif., San Francisco—E. D. Sweetland Co., 151 Mission St.  
Calif., San Francisco—Tay-Holbrook, Inc., 165 Eighth St.  
Calif., San Jose—San Jose Supply House, 520 First St.  
Calif., San Jose—Tay-Holbrook, Inc., 695 Stockton Ave.  
Calif., San Leandro—Republic Supply Co., 1919 Williams St.  
Calif., Santa Rosa—Tay-Holbrook, Inc., 251 Roberts Ave.  
Calif., Stockton—Tay-Holbrook, Inc., 1234 So. Aurora St.  
Calif., Vernon—Amstan Supply Div., American Radiator & Standard Sanitary Co., 3259 E. 46th St.  
Ida., Boise—Salt Lake Hardware Co.  
Ore., Eugene—American Steel & Supply Co., 44 Seventh Ave. E.  
Ore., Portland—American Steel Warehouse Co., 425 N.E. 9th Ave.  
Ore., Portland—Eagle Metals, Inc. of Oregon, 2336 No. Randolph Ave.  
Ore., Portland—Harris Supply Co., 524 N.W. 14th Ave.  
Ore., Portland—J. E. Haseltine & Co., 2nd and Ash Sts.  
Utah, Salt Lake City—Metals Supply Co., Inc., 131 Social Hall Ave., P. O. Box 606  
Utah, Salt Lake City—Pacific Metals Co., Ltd., 251 W. 5th St.  
Utah, Salt Lake City—Salt Lake Hardware Co., 105 N. Third W. St.  
Wash., Seattle—Campbell Industrial Supply Co., 3433 Airport Way  
Wash., Seattle—Eagle Metals Co., 4755 First Ave., So.  
Wash., Seattle—Schwabacher Hardware Co., 1st Ave. and Jackson St.  
Wash., Seattle—Seattle Hardware Co., 501 First Ave., So.  
Wash., Spokane—Eagle Metals Co., Helena at Broadway  
Wash., Spokane—Jensen-Byrd Co., Box 2172

**INGERSOLL-RAND CO.,** 11 Broadway, New York 4, N. Y.

Compressors, Condensers, Engines (diesel, gas), Motors (air), Pumps, Rock drills, Tools (air, electric), Turbo-blowers.

*Branch Offices*  
Calif., Los Angeles—1460 E. Fourth St. AN 8-6761  
Calif., San Francisco—350 Brannan St. GA 1-6330  
Colo., Denver—1641 Blake St. KE 4-2245  
Mont., Butte—845 So. Montana St. Phone 2-0451  
Ore., Portland—Rm. 1004, Broadway Bldg., Broadway and Morrison Sts. CA 3-1852  
Tex., El Paso—2100 Wyoming St. KE 2-3673  
Utah, Salt Lake City—144 S.W. Temple St. DA 8-8127  
Wash., Seattle—526 First Ave. So. MA 2866

**JANETTE ELECTRIC MFG. CO.,** Main at Lehigh, Morton Grove, Ill.

Geometers and speed reducers (1/125 to 7 1/2 hp., 431 to .05 rpm. output).

See advertisement on page 13

*Representatives*  
Ariz., Phoenix—Seman Bearing & Supply Co., 325 No. Third Ave.  
Calif., Fresno—Snider Electric Co., 2877 So. G St.

Calif., Los Angeles—Bearing Sales Co., 1950 So. Olive  
Calif., Los Angeles—Electric Motor Engineering Co., 8255 Beverly Blvd. WE 3-7591  
Calif., Los Angeles—Minarik Electric Co., 224 E. Third St.  
Calif., Los Angeles—Western Belting & Mechanicals, Inc., 3525 E. Emery St.  
Calif., Oakland—Bay City Iron Works, Fourth and Washington Sts.  
Calif., San Diego—Kenton Equipment Co., 629 First Ave.  
Calif., San Francisco—Hughdon Equipment Co., 178 Townsend St. YU 2-0888  
Colo., Denver—Felix Simon, P. O. Box 614. KE 4-0035  
Colo., Denver—Weaver Electric Co., 1721 Larimer St.  
Ore., Milton-Freewater—Widner Electric Co., 330 N.W. Fifth St.  
Ore., Portland—W. G. Ballantyne Co., 108 S.W. Front Ave. CA 8-4311  
Wash., Seattle—R. E. Kuns Co., 1016 First Ave. So. EL 4949  
Wash., Spokane—Bitco, Inc., E. 2920 Trent Ave.  
Wash., Tacoma—Docharme Belting & Rubber Co., 501 E. 34th St.

**JEFFREY MANUFACTURING CO.,** 920 No. Fourth St., Columbus 16, Ohio.

Bearings (hubbited), Chains for drives (detachable link, roller), Clutches, Conveyors, Couplings (shaft), Crushers, Elevators (bucket), Feeders, Hoppers (track), Pillow blocks, Pulleys, Sheaves, Sprockets.

See advertisement on page 63

*Branch Office*  
Calif., Burlingame—1862 Rollins Rd. OX 7-5308  
*Representatives*  
Ariz., Phoenix—Edward D. Maltby, Inc., 424 W. Jefferson Ave.  
Calif., Eureka—Bearings & Transmission Products, 2930 Broadway. HI 2-5727  
Calif., Fresno—General Bearings Co., 2820 Church Ave.  
Calif., Gardena—Alden Equipment Co., 1449 W. Rosecrans Ave. DA 9-6341  
Calif., Long Beach—Edward D. Maltby, Inc., 2041 W. Anaheim  
Calif., Los Angeles—Edward D. Maltby Co., Inc., 1718 So. Flower St. RI 7-9191  
Calif., Maywood—Edward D. Maltby Co., Inc., 4035 E. 52nd St. LO 5-5304  
Calif., Oakland—Bearing Engineering Co., 1019 Harrison St. TW 3-2251  
Calif., Sacramento—Sacramento Engineering & Machine Works, 6th and X Sts. GI 3-1313  
Calif., San Diego—Edward D. Maltby, Inc., 745 Fifteenth St.  
Calif., San Francisco—Bearing Engineering Co., 1547 Mission St. HE 1-1500  
Calif., San Francisco—General Conveyor, Inc., 870 Market St. EX 7-0737  
Calif., Stockton—The Bearing Supply, 300 No. Wilson Way. HO 4-4858  
Calif., Watsonville—Goodale Mfg. Co., 38 Menker St.  
Colo., Denver—Hendrie & Bolthoff Co., 1635 Seventeenth St.  
Colo., Denver—E. C. Horne Machinery Co., 1726 Champa St., Suite 315. TA 5-7015  
Mont., Billings—Bearings Supply Co., Second Ave. and 12th St. Phone 9-1195  
Nev., Reno—Styria-Sutton Co., 622 So. Virginia St. Phone 2-3281  
Ore., Portland—Northwest Chains & Sprockets, Inc., 31 N.W. First Ave. AT 5002  
Utah, Salt Lake City—National Equipment Co., 101 W. Second St. Phone 3-8878  
Wash., Seattle—Northwest Chains & Sprockets, Inc., 3628 E. Marginal Way. MA 8629  
Wyo., Casper—Power Service Co., 355 So. Ash

**JOHNS-MANVILLE CORP.,** 22 E. 40th St., New York 16, N. Y.

Conduits and fittings (electric), Insulations (industrial, electrical, building), Packings and friction materials, Panelboards (electric).

*Branch Offices*  
Calif., Los Angeles—816 W. 6th St.  
Calif., San Francisco—116 New Montgomery St.  
Calif., Oakland—430 Fortieth St.  
Colo., Denver—1755 Glenarm Place  
Ore., Portland—1220 S.W. Morrison St.  
Utah, Salt Lake City—109 W. 2nd So. St.  
Wash., Seattle—777 Thomas St.

**JOHNSON BRONZE CO.,** 500 So. Mill St., New Castle, Pa.

Sleeve type bearings, Bushings.  
*Branch Offices*  
Calif., Los Angeles—1818 So. Grand Ave. RI 8-6113

Calif., San Francisco—70 Charter Oak. JU 7-6013  
Wash., Seattle—1525 Tenth Ave. FR 0840

**JOHNSON CORP.,** 805 Wood St., Three Rivers, Mich.

Relay pressure joints, Compressed air separators and aftercoolers, Solenoid operated valves, Tank controls, Boiler water level controls, Pressure equalizing boiler feed pump, Instant steam water heater, Electrop for lifting, pumping and vacuum service.

## Representatives

Ariz., Phoenix—John Ladiow, P. O. Box 1784. BR 6-2371  
Calif., Los Angeles—Guy L. Warden & Sons, 209 W. 12th St.  
Calif., San Francisco—Calpacific Equipment Co., 50 Hawthorne St. GA 1-0697  
Colo., Denver—Thermal Industrial Engineering Co., 1932 Cherry St. EA 2-1098  
Ore., Portland—Forsyth-Constant Co., 921 S.W. Oak St. CA 8-6543  
Utah, Salt Lake City—Pace-Turpin Co., 726 So. Third W. DA 2-5595  
Wash., Seattle—Arthur Forsyth Co., 2800 15th Ave. W. AL 5717

**JOHNSON GEAR & MFG. CO., LTD.,** 8th & Parker Sts., Berkeley 10, Calif.  
Gears (spur, herringbone, worm, helical, straight and spiral bevel), Racks, Sprockets, Gear drives (right angle) for deep well turbine pumps and industrial use.

See advertisement on page 156

**JOHNSON METAL HOSE, INC.,** 10 Sperry St., Waterbury 20, Conn.  
Hose (air, flexible metallic).

## Representatives

Calif., Burlingame—W. P. Wooldridge Co., Burlingame Ave.  
Calif., Los Angeles—W. P. Wooldridge Co., 6440 Fleet St.  
Wash., Spokane—Pollard & Co., W. 1385 Broadway

**JORDAN CORP.,** 6013 Wiehe Rd., Cincinnati 13, Ohio.

Controls (air compressor, automatic, compressed air, gas, temperature, pressure, pump, steam, valve), Reducers (pressure), Regulators (air pressure, etc., hydraulic, steam), Valves (air—various kinds, air compressor, automatic, control—hydraulic, pressure reducing, regulating, etc.).

## Branch Offices

Calif., Los Angeles—727 W. 7th St. TU 4639  
Colo., Denver—10 So. Cody St. BE 7-4344

**JOY MANUFACTURING CO.,** Oliver Bldg., Pittsburgh 22, Pa.

Air compressors (portable, stationary), Conveyors and conveyor idlers, Hose (hydraulic), Motors (air).

## Branch Offices

Calif., Los Angeles—5426 E. Washington Blvd. RA 3-6305  
Calif., San Francisco—1155 Harrison St. HE 1-2446  
Colo., Denver—1626 Wazee St. KE 4-6334  
Utah, Salt Lake City—998 So. Sixth W St. DA 2-0481  
Wash., Seattle—2411 Western Ave. MU 2266

**KALAMAZOO DIV., THE NEW YORK AIR BRAKE CO. see NEW YORK AIR BRAKE CO., THE**

**KATO ENGINEERING CO.,** 1415 First Ave., Mankato, Minn.

Variable and fixed frequency motor-generator sets, Motors, Generators, Converters, Related control panels and equipment.

## Branch Office

Calif., Pasadena—3151 E. Colorado St. RY 1-6526

**E. KEELER CO.,** 238 West St., Williamsport 3, Pa.

Boilers and boiler equipment, Superheaters, Air heaters, Economizers, Unfired pressure vessels, Stacks, Breachings.

## Representatives

Calif., Los Angeles—Thermal Engineering & Equipment Co., 5469 San Fernando Rd. W. CH 5-3795  
Ore., Portland—Bumstead-Woolford Co., 320 S.W. Stark St. CA 8-6686  
Wash., Seattle—Bumstead-Woolford Co., 1411 Fourth Ave. EL 4915

**KELLOGG DIV., see AMERICAN BRAKE SHOE CO.**

**KINGWELL BROS., LTD.,** 457 Minna St., San Francisco 3, Calif.  
Bearings (sleeve).

See advertisement on page 169

## Branch Office

Calif., Huntington Park—2618 E. 53rd St. LU 2-7427

## Representatives

Calif., Los Angeles—Alquist Bros., 2300 E. 49th St. LU 8-9111  
Calif., San Francisco—Allan P. James Co., 430 Ninth St. MA 1-5934  
Colo., Denver—Union Bearing & Transmission Co., 1622 Wazee St. CH 4-6061  
Ore., Portland—Davis Industrial Products, 333 N.W. Sixth Ave. AT 6211  
Wash., Seattle—Industrial Products Co., 2911 First Ave., So. MA 7488

**KOEHRING CO., see HYDRAULIC PRESS MFG. CO.**

**KOPPERS CO., INC., METAL PRODUCTS DIV.,** 200 Scott St., Baltimore 3, Md.

Fast's self-aligning couplings.

## Branch Office

Calif., San Francisco—55 New Montgomery St. DO 2-3364

## Representatives

Calif., Los Angeles—Southport Corp., 235 W. 32nd St. RI 8-5191  
Calif., San Francisco—Oliver B. Lyman, 55 New Montgomery. SU 1-6440  
Colo., Denver—Schloss & Shubart, 1626 Wazee St. AC 2-2741  
Ore., Portland—Milwaukee Machinery Co., 400 S.W. Macadam. CA 8-7228  
Utah, Salt Lake City—Galigher Co., 545 W. Eighth St. SL 9-8731

**KUHLMAN ELECTRIC CO.,** P. O. Box 288, Birmingham, Mich.

Transformers (distribution, power, instrument, dry-type, load center, specialty).

## Branch Offices

Calif., Salinas—1056 Pellett Ave. Phone 4-3936 (West Coast Plant)  
Calif., San Francisco—870 Tennessee St. AT 8-6900

## Representatives

Ariz., Phoenix—Maydwell & Hartzell Sales & Engrg., Inc., 324 So. Second Ave. AL 8-9595  
Calif., Los Angeles—Maydwell & Hartzell, Inc., 427 W. Fifth St. MU 7245  
Calif., San Francisco—Maydwell & Hartzell, Inc., 870 Tennessee St. AT 8-6900  
Colo., Denver—Sales Engineers Co., 211-212 Wazee Market. AC 2-4893  
N. Mex., Albuquerque—Joe E. Pearce & Associates, P.O. Box 796. Phone 5-3257  
Ore., Portland—Maydwell & Hartzell, Inc., 2318 N.W. Vaughn. CA 5-4173  
Utah, Salt Lake City—Sales Engineers Co., 2269 McClelland. DA 4195  
Wash., Seattle—Maydwell & Hartzell, Inc., 306 Dexter Ave. SE 2368  
Wash., Spokane—David A. Brooks, c/o Cater Transfer & Storage Co., 121 So. Monroe St. MA 4-4326

**KURZ & ROOT CO.,** 232 E. North Island St., Appleton, Wis.

Generators (AC, DC), Motor generator sets, Motors (AC, DC).

## Branch Office

Calif., Los Angeles—1500 E. Fourth St. AN 3-8873

## Representative

Ore., Portland—Harlan C. McKay Co., 1901 N.W. 26th Ave. CA 7-5555

**L & L MFG. CO.,** 22349 Groesbeck Hwy., East Detroit, Mich.

Fittings and Couplings (air, hydraulic), Hose (air, power line, hydraulic power line).

## Representatives

Calif., San Anselmo—Karl Griener, 1180 Butterfield. GL 4-3762  
Colo., Denver—Plant Equipment Co., 1400 Market St. AL 5-5411  
Ore., Portland—Russ Chamberlin Co., 234 S.E. 12th Ave. BE 2-7124

**LADISH CO.,** 5481 So. Packard Ave., Cudahy, Wis.

Pipe fittings, Closed-impression die forgings, Welded or seamless rolled rings.

## Branch Offices

Calif., Los Angeles—3321 E. Slauson Ave. LU 3-4631  
Calif., San Francisco—420 Market St. YU 2-6360  
Colo., Denver—1508 Mile High Center Bldg. MA 3-5371  
Wash., Seattle—314 Fairview Ave. No. SE 0747

## Distributors

(Ladish pipe fittings are stocked and sold by distributors in principal Western centers.)

**LASSMAN, BENJAMIN, & SON,** Route 8, Glenshaw, Pa.

Hydraulic pump units, Cylinders, Valves, Special presses, Hydraulically powered equipment, Complete hydraulic systems.

## Representative

Wash., Seattle—A. F. Woolsey, 84 Madison. EL 7061

**LEDEEN MANUFACTURING CO.,** 3340 No. Gilman Rd., El Monte, Calif.

Air compressors (portable, stationary), Clutches, Controls (compressed air, hydraulic), Couplings (shaft), Cylinders (air, hydraulic), Reducers, speed (helical gear), Regulators (pressure), Valves (air power line, hydraulic power line).

## Representatives

Ariz., Phoenix—Lee Redman Equipment Co., P.O. Box 151, 610 So. 19th Ave. AL 8-3794  
Calif., Bakersfield—Hopper Machine Works, P.O. Box 1226, 301 26th St. Phone 4-4991  
Calif., Eureka—Eureka Boiler Works, Foot of S St. HI 3-1681  
Calif., Los Angeles—Engineering Products Co., 1600 So. San Pedro. RI 9-7044  
Calif., Oakland—The Otrich Co., 3664 Grand Ave. TE 2-3781  
Colo., Denver—Patten Engineering Co., 1745 Blake St. TA 5-3545  
Hawaii, Honolulu—Hawaiian Equipment Co., Ltd., P.O. Box 2990. Phone 8-2921  
Nev., Reno—Sierra Machinery Co., P.O. Box 1330, 307 Morrill Ave. Phone 2-6981  
N. Mex., Albuquerque—A. E. Boyd Equipment Co., P.O. Box 745, 3108 Fourth St., N.W. Ph 4-4016  
Ore., Eugene—American Steel & Supply Co., 44 7th Ave. E. Phone 5-0373  
Ore., Medford—American Steel & Supply Co., P.O. Box 1346. Phone 2-7181  
Ore., North Bend—Industrial Steel & Supply Co., P.O. Box 824. SK 9-2731  
Ore., Portland—Portland Engineering Co., 10895 N.W. Cornell Rd. MI 4-2611  
Utah, Salt Lake City—National Equipment Co., 101 W. 2nd St. SE. EM 3-8878  
Wash., Seattle—Standard Equipment Sales, 1231 First Ave. So. SE 1955  
Wash., Spokane—General Machinery Co., P.O. Box 4227, Sta. B. E. 3500 Riverside Ave. KE 1535

**LEEDS & NORTHRUP CO.,** 4970 Stenton Ave., Philadelphia 44, Pa.

Electronic indicators, recorders and controllers for combustion and load frequency measurement and control, Electric drive units for positioning dampers and fan louvers, pH measuring equipment, Steam temperature control for superheat and reheat sections, Oxygen measurement and control equipment.

## Branch Offices

Calif., Los Angeles—5111 Via Corona Ave. AN 9-3191  
Calif., San Francisco—Rm. 705 Grant Bldg., 1095 Market St. MA 1-3464  
Colo., Denver—1545 Glenarm Pl. AC 2-1808  
Wash., Seattle—1311 Republican St. EL 5505

**LE-HI DIV., see HOSE ACCESSORIES CO.**

**LEIMAN BROS., INC.,** 166 Christie St., P.O. Box 1339, Newark 1, N. J.  
Motors (air), Pumps (vacuum).

## Representatives

Calif., Los Angeles—Simonds Machinery Co., 455 E. 4th St. MU 8321  
Calif., San Francisco—Simonds Machinery Co., 816 Folsom St. DO 2-6794  
Ida., Wallace—Gardner Supply Co.  
Ore., Portland—Power Air Products, 1107 N.W. 14th Ave.  
Utah, Salt Lake City—Todd Machine Co., 4165 Holloway Dr.  
Wash., Seattle—Star Machinery Co., 241 Lander St. EL 0760

## LELAND — LINK — BELT

### LELAND ELECTRIC CO. DIV., THE, AMERICAN MACHINE & FOUNDRY CO., 1501 Webster St., Dayton 1, Ohio.

Generators (electric), Motors (electric).

#### Representatives

Calif., Los Angeles—C. E. Mello, Mfg. Agent, 406 So. Main St. MA 6-9159  
Calif., San Francisco—J. F. Cady, 1485 Bayshore Blvd. JU 5-4108  
Colo., Denver—Hubert Kaub & Co., 1025 Santa Fe Dr. MA 3-4606  
Utah, Salt Lake City—Gates Co., 200 So. Main St. Phone 9-1101

### LENZ CO., 3301 Klepinger Rd., Dayton 1, Ohio

Fittings and Couplings (air, hydraulic), Hose (air, hydraulic).

#### Distributors

Calif., Burlingame—Airdraulic Industrial Products Co., 1110 Carolan Ave. DI 3-2022  
Calif., El Monte—Engineering Products Co., 3350 No. Gilman Rd. CU 3-5165  
Calif., San Diego—Teglen Engineering Co., 4316 Elma Lane  
Calif., So. Pasadena—Teglen Engineering Co., P. O. Box 191, PY 1-2219  
Colo., Denver—E. C. Wild Co., 695 So. Garfield St. SF 7-2852  
Ore., Portland—Harian C. McKay Co., 1901 N.W. 26th Ave. CA 7-5565  
Ore., Portland—Power Transmission Products, 1107 N.W. 14th Ave. CA 7-1271  
Wash., Seattle—George W. Warden Co., Inc., 1305 Dexter Ave. AL 0622

### LESLIE CO., Grant Ave., Lyndhurst, N. J.

Controls (hydraulic), Regulators (pressure), Valves (air power line, hydraulic power line).

#### Representatives

Calif., San Francisco—Claude B. Smith Co., 200 Davis St. GA 1-7391  
Calif., Santa Ana—Frank Bueche Co., 902 E. 17th St. KI 7-1755  
Colo., Denver—Landes, Zachary & Peterson, 275 Kalamath St. MA 3-6203  
Colo., Grand Junction—Landes, Zachary & Peterson, P. O. Box 396, CH 2-9912  
N. Mex., Albuquerque—Landes, Zachary & Peterson, 1609 2nd St. N.W. Phone 2-7761  
Ore., Portland—John H. Marvin Co., 6106 N.E. 18th Ave. MU 7913  
Utah, Salt Lake City—Landes, Zachary & Peterson, 153½ W. Second St. St. Phone 2-0812  
Wash., Seattle—John H. Marvin Co., 422 1st Ave. W. EL 6861

### LEWELLEN MFG. CO., 1428 Tenth St., Columbus, Ind.

Variable speed transmissions, Variable pulleys with special and automatic controls.

#### Representatives

Calif., Los Angeles—J. W. Minder Chain & Gear Co., 6011 So. Central Ave. AD 3-7221  
Calif., Oakland—Otrich Co., Grand Ave. at Weldon. TE 2-3781  
Ore., Portland—Western Machinery Corp., 1035 S.E. Ninth Ave. BE 6-4117

### LICON SWITCH & CONTROL DIV., ILLINOIS TOOL WORKS, 2501 No. Keeler Ave., Chicago 39, Ill.

Precision electrical switches (limit, basic, toggle, hermetically sealed, subminiature).

#### Representatives

Calif., El Monte—Ash M. Wood Co., Box 150, CU 3-1501  
Calif., Irvington—Ash M. Wood Co., 118 Converse St. OL 6-3700  
Wash., Seattle—Farwest Agencies, 209 First Ave. So. EL 7232

### LIMA ELECTRIC MOTOR CO., INC., Findlay Rd., Lima, Ohio.

Motors (electric, poly-phase, AC; electric, single-phase, AC; variable speed), Transmission, variable speed.

#### Representatives

Calif., Berkeley—Moore Machinery Co., 7th and Carleton Sts. TH 3-1636  
Calif., Los Angeles—Darnall Machinery Co., 315 E. Washington Blvd. RI 7-0158  
Colo., Denver—Clyde P. Elliott Co., 661 Delaware St. AL 6-7988  
Wash., Seattle—Starbuck Machine Tool Co., 4111 Airport Way. MU 2260

### LINCOLN ENGINEERING CO. OF CALIF., 2844 So. Grand Ave., Los Angeles, Calif. RI 8-0151

Air compressors, Airline accessories, Controls, Hose (air, hydraulic), Pumps (heavy material, hydraulic), Valves (measuring).

#### Branch Offices

Calif., Berkeley—3033 San Pablo Ave. AS 3-6726  
Ore., Portland—1018 S.E. 8th Ave. BE 4-7469

#### Distributors

Ariz., Flagstaff—Motor Supply Co., 13 No. Agassiz St.  
Ariz., Phoenix—Colyear Motor Sales Co., 338 W. Adams  
Ariz., Phoenix—Kerstiens Parts & Machine, 1321 So. Central Ave.  
Ariz., Phoenix—Republic Supply Co., 405 E. Roosevelt St. AL 3-0134  
Ariz., Tucson—Colyear Motor Sales Co., 123 No. Sixth Ave.  
Ariz., Tucson—Motor Supply Co., 140 So. Sixth Ave.  
Calif., Arcata—Arcata Auto Supply  
Calif., Avenal—Republic Supply Co., 4th and Skyline Dr. Phone 251  
Calif., Bakersfield—Republic Supply Co., P.O. Box 832, FA 7-8471  
Calif., Bakersfield—Valley Auto Parts, 130 19th St.  
Calif., Eureka—Humboldt Supply Co., 2029 Broadway, HI 2-6457  
Calif., Fortuna—Fortuna Auto Supply  
Calif., Fresno—Republic Supply Co., 155 Van Ness, Phone 2-7194  
Calif., Fresno—Rol Pak Filter Service, 3036 Church St. Phone 2-6811  
Calif., Huntington—Republic Supply Co., 1902 17th St. LE 6-4596  
Calif., Long Beach—Republic Supply Co., 3080 Cherry Ave. NE 6-6042  
Calif., Los Angeles—2600 So. Eastland Ave. PA 80-7151  
Calif., Riverside—Allbright's, Eighth and Fairmount  
Calif., Sacramento—Knapp Industrial Service, 515 12th St. HU 4-9208  
Calif., Sacramento—Republic Supply Co., 1331 T St. HU 4-2807  
Calif., San Bernardino—San Bernardino Motor Parts, Inc., Second and F Sts.  
Calif., San Francisco—Pauli & Griffin Co., 509 Sixth St. SU 1-4670  
Calif., San Francisco—Wait Motor Supply, 234 7th St. HE 1-6116  
Calif., San Jose—Republic Supply Co., 442 Park Ave. CY 5-3707  
Calif., San Leandro—Republic Supply Co., 1919 Williams St. LO 2-0414  
Calif., Santa Maria—Republic Supply Co., Hwy. 101 and Newlove Dr. WA 5-3657  
Calif., Stockton—Hickinbotham Bros., 636 So. Aurora. Phone 5-9541  
Calif., Taft—Republic Supply Co., 6th and Supply Row, Phone 5-4191  
Calif., Ventura—Republic Supply Co., Ventura Ave. MI 3-6158  
Ida., Boise—Intermountain Equipment Co., Broadway and Myrtle  
Nev., Las Vegas—General Auto Parts, 900 So. Fifth St.  
Ore., Portland—Burns Bros. Tire & Supply Co., 621 S.E. Union Ave.  
Ore., Portland—Oil Filter Service Co., 615 S.E. Market St.  
Wash., Seattle—Campbell Industrial Supply Co., 3433 Airport Way at Spokane St.  
Wash., Seattle—Oil Filter Service Co., Inc., 1019 Westlake No.  
Wash., Spokane—Intermountain Equipment Co., P. O. Box 2183  
Wash., Spokane—A. G. Mohn Co., 102 Sprague Ave. E.

### LINDBERG AIR & HYDRAULIC DIV., TEER, WICKWIRE & CO., 1801 Wildwood Ave., Jackson, Mich.

Air and hydraulic cylinders.

#### Representatives

Calif., Oakland—Rucker Co., 4700 San Pablo Ave. OL 3-5221  
Calif., South Gate—Rucker Co., 4956 Firestone Blvd. LU 8-8271  
Ore., Portland—Rucker Co., 911 N.W. Hoyt St. BE 0205  
Wash., Seattle—Rucker Co., 1000 Fourth Ave. So. MA 2783

### LINE ELECTRIC CO., 271 So. Sixth St., Newark 3, N. J.

Relays (general purpose, plug-in, open, plate, series).

#### Representatives

Calif., Los Angeles—Bray & Carter, 2234 W. 11th St. DU 9-3173  
Wash., Seattle—C. B. Parsons Co., 3028 1st Ave. MU 3933

### LINK-BELT CO., Dept. 957-WI, Prudential Plaza, Chicago 1, Ill.

Backstops, Bases (motor), Bearings (babbitted, ball, roller, sleeve), Belting, drive (chain or link, rubber), Belts (timing), Belts, V (rubber), Chains for drives (detachable link, roller, silent transmission, steel, cast, rivetless, promal), Clutches (friction), Collars (shaft), Couplings (shaft), Fluid drives, Gearmotors, Gears (bevel, helical, worm), Gear drives (in-line helical, parallel shaft, worm), Hangers (shaft), Increasers (speed), Motors (gear, variable speed), Pinion blocks, Pulleys, Reducers, speed (helical gear, shaft mounted, spur gear, worm gear), Sprockets, Take ups, Transmissions, variable speed, Variable speed drives.

See advertisement on page 7

### Plants, Branch Stores or District Sales Offices

Calif., Los Angeles—361 So. Anderson St. AN 8-6171  
Calif., San Francisco—400 Paul Ave. JU 7-6400  
Colo., Denver—Schloss & Shubart, 1626 Waze St. AC 2-2741  
Ore., Portland—3030 N.W. Industrial St. CA 6-2601  
Utah, Salt Lake City—108 So. Fourth W. St. DA 2-2539  
Wash., Seattle—3405 Sixth Ave., So. SE 8200  
Wash., Spokane—No. 1308 Washington St. FA 8-5520

**Distributors**

Ariz., Phoenix—Thunderbird Sales Corp., 2255 W. McDowell, AL 4-8374  
Ariz., Prescott—Arizona Mining Supply Corp., P.O. Box 110, Phone 310  
Calif., Bakersfield—California Truck & Industrial Equipment Co., 2301 Brundage Lane, FA 5-5914  
Calif., Colton—Valley Industrial Supply Co., 401 So. 8th St. TA 5-4342  
Calif., El Centro—Valley Auto Supply, 633 State St. EL 2-3391  
Calif., Eureka—Fred E. Barnett Co., Broadway and Harris Sts. Phone 2-3791  
Calif., Fresno—Bearings Supply Co., 2983 Hamilton Ave. AD 3-7144  
Calif., Long Beach—Barnes & Delaney, 2600 Atlantic Ave. GA 4-1601, NE 6-1785  
Calif., Los Angeles—General Bearings Co., 2017 Santa Fe Ave. TR 2338  
Calif., Modesto—Geiger Iron Works, Inc., Grand and Willow Sts. LA 3-5387  
Calif., Monterey—Sweet Service Co., 634 Washington St. Phone 5-4119  
Calif., Oakland—American Ball & Roller Bearing Co., 278 26th St. HI 4-8392  
Calif., Oakland—Hoffmeyer Belting & Supply Co., 541 E. Eighth St. TE 4-8636  
Calif., Ontario—Valley Industrial Supply Co., Inc., 1170 Holt Blvd. YU 6-3827  
Calif., Redding—Cascade Industrial Supply, Inc., Highway 99 South, Phone 1195  
Calif., Sacramento—Geiger Iron Works, Inc., 2425 24th St. GL 1-7214  
Calif., San Diego—Gould Hardware & Machinery Co., 2212 Main St. BE 2-6174  
Calif., San Francisco—Weeks-Howe-Emerson Co., Industrial Div., 750 Harrison St. SU 1-3662  
Calif., San Jose—Orchard Supply Hardware, Industrial Div., 720 W. San Carlos St. CY 2-6282  
Calif., Santa Cruz—Sweet Service Co., 504 Front St. GA 3-5697  
Calif., Stockton—Sweet Service Co., Inc., Scotts Ave. and Pilgrim St. HO 6-3623  
Calif., Ukiah—Fred E. Barnett Co., North Highway 101, HO 2-6554  
Calif., Watsonville—Sweet Service Co., 38 Alexander St. Phone 4-4775  
Ida., Boise—Western Bearings, Inc., 520 Front St. Phone 2-5583  
Ida., Parma—Transmission Products (Div. Parma Water Lifter Co.), Phone 2-2611  
Ida., Pocatello—Western Bearings, Inc., 156 So. Third St. Phone 3518  
Ida., Twin Falls—Western Bearings, Inc., 223 Fourth Ave. W. Phone 4208  
Mont., Missoula—Missoula Mercantile Co., 1600 Harker, Phone 2-2111  
Nev., Reno—Sierra Industrial Co., Inc., 307 Morrill Ave. FA 3-1301  
Ore., Coos Bay—Coos Bay Supply Co., 1023 So. Broadway, CO 7-4111  
Ore., Eugene—American Steel & Supply Co., 61 E. 7th St. Phone 5-0878  
Ore., Klamath Falls—Fred E. Barnett Co. of Oregon, 600 Spring St. TU 4-5153  
Ore., Medford—American Steel & Supply, Medford, Inc., 703 So. Grape St. ME 2-7181  
Ore., Portland—Power Transmission Products (Div. Portland Iron Works), 1107 N.W. 14th Ave. CA 7-1271  
Ore., Roseburg—Douglas Supply Co., 649 N.E. Rose St. OR 3-6635  
Ore., Salem—Stevens Equipment Co., 110 Division St. EM 4-2281



Utah, Salt Lake City—Industrial Supply Co., Inc., 121-135 Social Hall Ave. EM 3-6727  
Utah, Price—H & J Supply Co., 540 So. Third St. W. Phone 1036  
Wash., Aberdeen—Grays Harbor Equipment Co., 419 So. F St. Phone 331, 397  
Wash., Everett—Everett Trans. & Rubber Co., 2925 Rucker Ave. BA 6767, 1505  
Wash., Hoquiam—Lamb-Grays Harbor Co., Blaine and Firman Sts. HO 1000  
Wash., Seattle—Bearing Engineering & Supply Co., 65 Horton St. MA 2744  
Wash., Spokane—Carter-Miller Mill Furnishing Co., No. 1320 Ash St. FA 7-6624  
Wash., Walla Walla—Drumheller Co., 1 W. Alder St. WA 48  
Wash., Wenatchee—Wells & Wade Hardware, 201-215 So. Wenatchee Ave. NO 2-7173  
Wash., Yakima—Central Chain & Transmission Co., Inc., 709 So. First St. GL 7-6188

## LORD MFG. CO., 1635 W. 12th St., Erie, Pa.

Vibration control mountings, Shock mountings, Flexible couplings, Machinery mountings.

Branch Office  
Calif., Los Angeles—Suite 702, Hollywood Professional Bldg., 7046 Hollywood Blvd. HO 4-7593

## LOUIS ALLIS CO., THE, 427 E. Stewart St., Milwaukee 1, Wis.

Bosses (motor), Controls (electric motor), Gearmotors, Motors (electric DC, electric poly-phase and single-phase AC, variable speed), Panelboards (electric), Reducers, speed (bevel gear, helical gear, worm gear), Transmissions, variable speed.

See advertisement on page 87

### Branch Offices

Calif., Burlingame—1275 Rollins Rd. DI 2-4393  
Calif., Los Angeles—3242 W. Eighth St. DU 5-3941  
Colo., Denver—1025 Santa Fe Drive. MA 3-4606  
Ore., Portland—P. O. Box 7712. AT 4-2187  
Utah, Salt Lake City—818 E. 21st St.  
Wash., Seattle—908 5th Ave. So.

### Representatives

Ariz., Phoenix—Daley Electric Co., 1825 E. Jefferson  
Calif., Arcata—Humboldt Machine Works, 937 Tenth St. Phone 12  
Calif., Burbank—Valley Equipment & Supply, 439 1/2 So. Victory  
Calif., Los Angeles—Progressive Electric Co., 2112 Santa Fe  
Calif., Los Angeles—Sweinhart Electric Co., 2900 E. Olympic. AN 3-7466  
Calif., Sacramento—Van Alstyne & Sons, 2512 Broadway. GL 7-9835  
Calif., San Diego—Gould Hardware & Machinery Co., 2312 Main St.  
Calif., San Francisco—Atlas Electric Co., 617 7th St. KL 2-3676  
Calif., San Francisco—Fred G. Guthrie, 420 Market St. EX 2-8296  
Colo., Denver—Power Transmission Co., 4965 Jackson St. DU 8-1681  
Colo., Denver—Ward Electric, 116 Tenth St.  
Colo., Denver—Weaver Electric, 1721 Larimer St. AL 5-5481  
Ida., Boise—Idaho Chain & Sprocket Co., 2801 Warm Springs. Phone 3-5464  
Ida., Lewiston—Jameson Machinery & Supply, 855 D. Phone 3-4517  
Ida., Pocatello—C & L Electric Co., 410 So. Main St. Phone 513  
Mont., Billings—Great Northern Tool & Supply, 2224 Minneapolis Ave. Phone 2-2141  
Mont., Great Falls—Mosch Electric Co., 10 Second St. So.  
N. Mex., Albuquerque—Harry Cornelius, 1510 Second St. Phone 3-1776  
N. Mex., Albuquerque—Technical Service Co., 730 Haines St. Phone 7-1508  
Ore., Bend—Bend Iron Works, P. O. Box 807. Phone 74  
Ore., Eugene—Electric Steel Foundry, 1464 W. 6th St. AT 2141  
Ore., Portland—George B. Schetky, 1825 N.W. Vaughn  
Ore., Portland—Stubbs Electric Co., 33 N.W. Park Ave. BR 5404  
Utah, Ogden—Johnson Electric Co., 377 22nd St. Phone 9219  
Wash., Pasco—Lehl Electric Supply, 327 W. Clark. Phone 7596  
Wash., Seattle—Tye Machinery Co., 1924 First Ave. MU 5881  
Wash., Yakima—Dodge Yakima Supply, 109 So. Front St. Phone 6495  
Wyo., Casper—Electric Service, 1120 E. B St. Phone 2-7866

## LOVEJOY FLEXIBLE COUPLING CO., 4823 West Lake St., Chicago 44, Ill.

Flexible couplings, Pulleys (variable speed), Universal joints (aircraft type), Motor bases, Shaft couplings.

See advertisement on page 166

### Representatives

Ariz., Phoenix—E. E. Rempfer, 5714 N. 11th St. Calif., Huntington Park—Lovejoy Sales & Service, 7319 Cottage St. LU 2-6837  
Calif., Oakland—E. L. Parsons, 600 16th St. TW 3-1577  
Colo., Denver—Spicer-Lindsay Associates, 2475 W. 26th Ave. GR 7-1247  
Hawaii, Honolulu—Von Hamm Young Co., Ltd., P. O. Box 2630  
Ore., Portland—Edward Schiefelblin, 1730 N. W. 25th Ave. CA 3-5345  
Wash., Seattle—Chain Gear, Inc., 821 1st Ave. So. MA 7000

## LUFKIN FOUNDRY & MACHINE CO., Lufkin, Tex.

Herringbone gear reducers, High speed increasers (herringbone or double helical).

See advertisements on pages 56, 57

### Branch Offices

Calif., Bakersfield—30th and M Sts. FA 7-8564  
Calif., Los Angeles—5959 So. Alameda. LU 5-1201  
Colo., Denver—1423 Mile High Center. AL 5-1616  
N. Mex., Hobbs—P. O. Box 104. EX 3-5211  
Ore., Portland—J. W. Minder Chain & Gear Co., 307 S.E. Hawthorne Blvd. BE 6-1131

## LUNKENHEIMER CO., Beekman St. and Waverly Ave., Cincinnati, Ohio

Iron, bronze, steel, plastic and special alloy valves; Cocks; Grease and oil cups; Gauges; Lubricators; Oilers; Boiler mountings.

### Representatives

Calif., Los Angeles—Carl B. Rosser, Jr., c/o Republic Supply Co., P. O. Box 2137, Terminal Annex  
Calif., San Leandro—Lunkenheimer Co., 1919 Williams St.  
Calif., South Gate—L. Allen Barth, 10330 Blumont Rd.  
Calif., Whittier—Lunkenheimer Co., 6749 Boer Ave.  
Ore., Oswego—Lunkenheimer Co., 13221 S.W. Knaus Rd.

## M-B PRODUCTS, INC., 46 Victor Ave., Detroit 3, Mich.

Filters (air), Lubricators (air), Regulators (air), Traps (air).

### Representatives

Calif., Glendale—G. E. Rayman Co., 511 So. Glendale Ave.  
Calif., Glendale—Valley Engineers, 418 No. Glendale Ave.  
Calif., Los Angeles—Almquist Brothers, 2300 E. 49th St.  
Calif., Los Angeles—Willard Engineering Co., 2709 So. Hill St.  
Calif., San Diego—Oil Filter Service, 2405 E. Harbor Dr.  
Calif., San Francisco—Transmission Engr., 53 Stevenson St.  
Ore., Portland—Hydraulic & Air Equipment, 2316 N.W. Savier St.  
Wash., Seattle—H. F. Soderling Co., 1729 First Ave. So.

## MADDEN CORP., 1345 Jarvis Ave., Chicago 26, Ill.

Proportioning pumps, Continuous boiler blowdown systems.

### Representatives

Calif., Los Angeles—Thermal Engineering & Equipment Co., 5469 San Fernando Rd. W. CH 5-3795  
Calif., Los Angeles—Westco Pump Sales Co., 4621 Shelia St. AN 2-1155  
Calif., San Francisco—Calpac Equipment Co., 50 Hawthorne St. GA 1-0697

## MALSBARY MFG. CO., 845 92nd Ave., Oakland 3, Calif.

Steam vapor cleaners, High pressure combination cleaners.

### Branch Offices

Calif., Los Angeles—3923 W. Sixth St. DU 5-5089  
Colo., Denver—2802 So. Race St. SK 6-5911  
Mont., Billings—Industrial Supply Co., 315 Hart-Albin Bldg. Phone 9-3296  
Utah, Salt Lake City—Karl Winter Co., 61 E. Seventh St. So. EL 5-6275

Wash., Seattle—6057 35th Ave. N.E. PL 7435

### Representatives

Ariz., Phoenix—Amka Chemical, Inc., 2229 No. 29th Ave. AP 8-0467  
Ariz., Phoenix—Complete Auto Supply & Industrial Div., 501 W. Van Buren  
Ariz., Tucson—Complete Auto Supply & Industrial Div., 506-77 Stone. MA 3-6701  
Calif., Bakersfield—Diefel's, 1614 27th St. FA 4-9669  
Calif., Delano—Green Motor Parts, 1124 High St.  
Calif., Eureka—Northwest Steam Cleaner, Broadway and Cedar. HI 3-1057  
Calif., Fresno—Haehl Equipment, 1903 No. Hwy. 99. Phone 3-8843  
Calif., Hanford—Green Motor Parts, 216 E. Seventh St. LU 2-0431  
Calif., Los Angeles—Delco Chemical, Inc., 2700 So. Eastern Ave. RA 3-9711  
Calif., Los Angeles—Du Bois Co., 390 So. Mission Rd. An 8-0141  
Calif., Los Angeles—Turco Products, Inc., 441 E. 132nd St. FA 1-2326  
Calif., Maywood—California Pacific Equipment Co., 6004 Walker. LU 5-0469  
Calif., Modesto—Modern Chemical Co., 518 Virginia St. LA 2-0877  
Calif., Oakland—L. D. Berlin, 600 16th St. TW 3-9720  
Calif., Oakland—Vernon Chemical, 10406 Longfellow Ave. LO 9-5393  
Calif., Oakland—S & M Service, 1083 98th Ave. LO 2-3561  
Calif., Oakland—C. M. Ward & Co., 883 Walker Ave. GL 2-1804  
Calif., Palo Alto—Wilson Sales, 465 California Ave. So. DA 2-7468  
Calif., Porterville—Green Motor Parts, 112 No. Main.  
Calif., Sacramento—Continental Chemical, 225 Almont. WA 5-3452  
Calif., Sacramento—Henderson Bros., 1800 23rd St. GL 2-4561  
Calif., Salinas—Lacy Auto Parts, 108 Monterey St. HA 4-2514  
Calif., San Francisco—Edward R. Bacon Co., 2101 Folsom St. HE 1-3700  
Calif., San Diego—Westernlund & Lange, 1432 Union St. BE 2-0115  
Calif., Stockton—Shop Equipment Supply, 1 E. Miner St. HO 4-0326  
Calif., Tulare—Green Motor Parts, 145 No. K St. TU 6-3403  
Colo., Denver—Thrift Sales Co., 1835 Vine St. FL 5-0232  
Colo., Denver—Turco Products, Inc., 2101 Market St. MA 5347  
Mont., Billings—Hines Motor Supply, 14 No. 30th St.  
Ore., Eugene—Jerry's Specialized Sales & Service, 1601 W. Second St. DI 5-0039  
Ore., McMinnville—Davison's Auto Parts, 206 Evans St. Phones 1811, 2862  
Ore., Medford—Witham Parts & Equipment, Fifth and Riverside. Phone 2-6159  
Ore., Portland—Greater Mountain Chemical, 81 S.E. Yamhill. BE 4-4060  
Wash., Everett—Industrial Equipment, 2202 Everett Ave. BA 8123  
Wash., Seattle—Automotive Steam Cleaners, 3231 Fourth Ave. So. MA 0762  
Wash., Seattle—Ditto Equipment Co., 6747 Empire Way. MO 9850  
Wash., Seattle—Hallidie Machinery, 210 Hudson St. LA 9520  
Wash., Spokane—Modern Machinery Co., E. 4412 Trent Ave. KE 9353  
Wash., Walla Walla—Campbell's Industrial Cleaning, 123 E. Alder. JA 5-2950

## MANHEIM MFG. & BELTING CO., 271 Stiegel St., Manheim, Pa.

Belting, drive (link), Belts, V (rubber).

### Representatives

Calif., Los Angeles—A. W. Nash, 2112 So. Atlantic Blvd.  
Wash., Seattle—T. T. Watson, 508 5th Ave. So.

## MARLIN-ROCKWELL CORP., 402 Chandler St., Jamestown, N. Y.

Bearings (ball and roller including super-precision, shielded and sealed types), Instrument and aircraft control bearings, Power transmission bearings.

### Branch Office

Calif., San Francisco—M-R-C Bearings Service Co., 1234 Mariposa St. KL 2-3457

### Representatives

Ariz., Phoenix—Edward D. Maltby Co., 424 W. Jefferson. AL 4-9227  
Calif., Anaheim—Edward D. Maltby Co., P & L Transmission Div., 1520 W. Lincoln Ave.  
Calif., Long Beach—Edward D. Maltby Co., 2041 W. Anaheim St. HE 7-1808  
Calif., Los Angeles—Edward D. Maltby Co., 1940 So. Figueroa St. RI 7-9191  
Calif., Maywood—Edward D. Maltby Co., 4085 E. 52nd St. LU 2-5304  
Calif., San Diego—Edward D. Maltby Co., 745 15th St. BE 2-7278  
Colo., Denver—Motor Parts Warehouse Co., 729 Broadway. FL 5-7260

## MASON - NEILAN - MINNESOTA

Ore., Portland—Brown Bearing Co., 715 N.E. Davis St. BE 2-6188  
Wash., Seattle—Brown Bearing Co., 2440 First Ave., So. MA 2404  
Wash., Spokane—Brown Bearing Co., W. 1102 First Ave. MA 4-3293

### MASON-NEILAN DIV., WORTHINGTON CORP., Norwood, Mass.

Controllers (liquid level), Control Instruments, Valves (diaphragm control, pressure regulating).

**Branch Offices**  
Calif., Los Angeles—2822 E. Olympic Blvd. AN 1-1418  
Calif., San Francisco—525 Market St. EX 7-0550  
Wash., Seattle—1922 Elliott Ave. GA 0141

**Representatives**  
Ariz., Phoenix—George S. Thompson Co., 915 So. Central Ave.  
Colo., Denver—Denver Fire Clay Co., 2301 Blake St. TA 5-0251  
Utah, Salt Lake City—Denver Fire Clay Co., 225 W. South Temple. Phone 4-5565

### MASTER ELECTRIC CO., THE, 126 Davis Ave., Dayton 1, Ohio

Bases (motor). Gearmotors (reduction ratios up to 432:1). Fluid drive motors. Motors (electric, magnetic or dynamic types, variable speed).

**Branch Offices**  
Ariz., Phoenix—5545 No. Kay Drive. AL 8-8511  
Calif., Los Angeles—1539 Grande Vista Ave. AN 1-5105  
Calif., San Francisco—270 Seventh St. MA 1-1244  
Colo., Denver—1028 Champa St. CH 4-0558  
Ore., Portland—801 S.W. Front Ave. CA 8-7395  
Utah, Salt Lake City—1481 So. Main St. HU 4-1133  
Wash., Seattle—241 Lander St. EL 0760  
Wash., Spokane—E. 415 Sprague Ave. RI 6121  
**Representatives**  
Calif., El Centro—Winn Supply Co., 354 E. Main St.  
Calif., Los Angeles—Smallcomb Electric Co., 1120 So. Main St.  
Calif., Modesto—Geiger Iron Works, 124 Willow St.  
Calif., Sacramento—Geiger Iron Works, 2425 24th St.  
Calif., San Diego—Winn Supply Co., 256 Seventh Ave.  
Calif., San Francisco—McCrea Engineering Supply Co., 285 Seventh St.  
Calif., San Jose—Pacific Hardware & Steel Co., 950 No. Seventh St.  
Calif., Stockton—Geiger Iron Works, 1140 E. Scott Ave.  
Calif., Wilmington—Ets-Hokin & Galvan, 218 No. Avalon Blvd.  
Colo., Denver—Tree Electric Service, Inc., 1826 Larimer St.  
Colo., Denver—Wazee Electric Co., 2020 W. Barbary Pl.  
Ida., Pocatello—Paul Roberts, 850 So. Main St.  
Nev., Reno—Brown-Milberry Co., No. Sierra St.  
N. Mex., Albuquerque—Electric Motor Co., 1801 Lomas Blvd. N.E.  
Ore., Portland—Star Machinery Co., 801 S.W. Front St.  
Utah, Ogden—Horsley Co., 2416 Grant Ave.  
Utah, Salt Lake City—Bearings Service & Supply Co., 1207 So. Main St.  
Wash., Seattle—Star Machinery Co., 241 Lander St.  
Wash., Spokane—Star Machinery Co., E. 415 Sprague Ave.

### MCDONNELL & MILLER, INC., 3500 No. Spaulding Ave., Chicago 18, Ill.

Boiler water level controls, Dump controllers, Safety devices for steam and water boilers.

**Representatives**  
(All wholesalers of plumbing and heating supplies.)

### McGILL MFG. CO., No. Lafayette St., Valparaiso, Ind.

Roller and ball bearings, electric switches.

**Representatives**  
Calif., Los Angeles—Bearing Specialty Co., 225 W. 27th. RI 9-5327  
Calif., San Francisco—Bearing Specialty Co., 128 Texas St. HE 1-4140  
Ore., Portland—Bearing Sales & Service, 1645 N.W. Hoyt St. CA 5-4301  
Wash., Seattle—Bearing Sales & Service, 2908 Sixth Ave. So. MU 0331

### MECHANICAL AIR CONTROLS, INC., 10030 Capital (Oak Park), Detroit 37, Mich.

Valves (air power line).

**Representatives**  
Calif., Oakland—Rucker Co., 4700 San Pablo Ave. OL 3-5221

Calif., South Gate—Rucker Co., 4956 Firestone Blvd. LO 4-2621  
Ore., Portland—Rucker Co., 911 N.W. Hoyt St. CA 3-0205  
Wash., Seattle—Rucker Co., 1000 Fourth Ave. So. MA 2783

### MERCOLD CORP., THE, 4201 Belmont Ave., Chicago 41, Ill.

Mercury switch equipped automatic controls for pressure, differential pressure, temperature, liquid level, mechanical movement, relays and hermetically sealed mercury contact switches.

**Representatives**  
Calif., Los Angeles—Jensen Instrument Co., 1919 W. Beverly Blvd.  
Calif., San Francisco—Jensen Instrument Co., 429 Bryant St.  
Colo., Denver—J. M. Warner, 600 W. 48th St.  
Ore., Portland—Johnson Heating Supply Co., 232 N.E. 9th Ave.  
Utah, Salt Lake City—Stevens Sales Co., 1482 Major St.  
Wash., Seattle—E. H. Langdon Co., 72 Vine St.

### MERCURY CLUTCH DIV., AUTOMATIC STEEL PRODUCTS, INC., 1201 Camden Ave., S.W., Canton 6, Ohio

Clutches (automatic, centrifugal—for gasoline engines and electric motors).

**Representatives**  
Calif., Alhambra—Cox Sales & Engineering, 1819 W. Valley Blvd. CU 3-2351  
Calif., Oakland—Dean Lewis Associates, 4385 Piedmont Ave. OL 4-0618  
Colo., Arvada—J. H. Dorrough Co., 5985 Dover St. HA 4-4558  
Wash., Seattle—Marsh Agencies, 2601 First St. MA 8761

**Distributors**  
Ariz., Phoenix—Motor Supply Co., 402-414 No. Central  
Ariz., Tucson—Motor Supply Co., 140 So. 6th St.  
Calif., Los Angeles—Magneto Sales & Service, 751 Towne Ave.  
Calif., San Francisco—Frank Edwards Co., 382-4 Sixth Ave.  
Colo., Denver—Central Auto Electric Co., 12th Ave. and Lincoln  
Ore., Portland—The Stevens Corp., 1411 N.W. Flanders  
Utah, Salt Lake City—Frank Edwards Co., 511 So. State St.

### MICRO-SWITCH DIV., see MINNEAPOLIS-HONEYWELL CO.

### MIDWEST PIPING CO., INC., 1450 So. Second St., St. Louis 4, Mo.

Fabricated pipe, Pipe welding fittings, Piping construction.

**Branch Offices**  
Calif., Los Angeles—520 Anderson St. AN 8-6733  
Calif., San Francisco—420 Market St. YU 2-6859

### MILJAN, INC., 15506 So. Lakewood Blvd., Paramount, Calif. TO 6-1019

Teflon encapsulated electrical cables. Deltimeter for measuring small and slow changes in voltage.

**Representative**  
Calif., Alhambra—M. W. Riedel & Co., 1633 Cabrillo Ave. CU 3-4904

### MILLER FLUID POWER DIV., FLICK-REEDY CORP., 2040 No. Hawthorne Ave., Melrose Park, Ill.

Cylinders (air, hydraulic).

**Branch Office**  
Calif., San Francisco—561 Buckingham Way. MO 4-3531

**Representatives**  
Calif., So. Pasadena—Tegen Engineering Co., 1942 Huntington Ave. RY 1-2856  
Colo., Aurora (Denver)—Alta Engineering Co., 1988 Nome St. EM 6-3557  
Wash., Seattle—George W. Warden Co., 1305 Dexter Ave. AD 0622

### MINDER, J. W., CHAIN & GEAR CO., 6011 So. Central Ave., Los Angeles 1, Calif. AD 3-7221

Transmission equipment (mechanical power), Gears (bevel, helical, spur, etc.), Gears (worm), Sheaves, Sprockets.

See advertisement on page 30

**Branch Office**  
Ore., Portland—307 S.E. Hawthorne Blvd. BE 6-1131

### MINIATURE PRECISION BEARINGS, INC., Precision Park, Keene, N. H.

Miniature precision ball bearings.

**Branch Office**  
Calif., Los Angeles—6214 W. Manchester Ave. OR 8-0027

**Representatives**  
Ariz., Phoenix—Edward D. Maltby Co., 424 W. Jefferson. AL 3-3789  
Calif., Los Angeles—Edward D. Maltby Co., 1937 So. Flower St. RI 7-9191  
Calif., Sacramento—Geo. M. Philpott Co., 6260 Folsom Blvd. GL 2-2641  
Calif., San Francisco—Geo. M. Philpott Co., 1060 Bryant St. HE 1-5475  
Wash., Seattle—Bearing Engineering & Supply Co., 2548 Airport Way. MA 2744

### MINNEAPOLIS-HONEYWELL CO., BROWN INSTRUMENT DIV., Wayne and Windrim Ave., Philadelphia 44, Pa.

Electrical, pneumatic, electronic and mechanical types of indicating, non-indicating, transmitting, recording and controlling instruments, including conventional size and miniature models. Also, comprehensive selection of valves, primary elements and accessories.

**Branch Offices**  
Ariz., Phoenix—4125 No. Seventh St. CR 4-3568  
Calif., Los Angeles—6620 Telegraph Rd. RA 3-6611  
Calif., Sacramento—1402 E St. GI 1-0131  
Calif., San Diego—2153 Moore St. CY 6-2111  
Calif., San Francisco—2 Dorman Ave. AT 8-0118  
Colo., Denver—1600 W. 13th Ave. AC 2-4866  
Ore., Portland—2600 S.E. Belmont. BE 4-6511  
Utah, Salt Lake City—2280 So. Main St. IN 6-8628  
Wash., Richland—1329 George Washington Way RI 5-6670  
Wash., Seattle—401 Pontius Ave. No. MU 5610

### MICRO-SWITCH DIV., MINNEAPOLIS-HONEYWELL CO., Chicago and Spring Sts., Freeport, Ill.

Switches (automatic, electric).

**Branch Offices**  
Ariz., Phoenix—4125 No. Seventh Ave. CR 4-7791  
Calif., Los Angeles—6620 Telegraph Rd. RA 3-7104  
Calif., San Francisco—2 Dorman Ave. AT 8-1221  
Colo., Denver—1600 W. 13th Ave. AM 6-2491  
Wash., Seattle—401 Pontius Ave. No. MU 4590

**Distributors**  
Ariz., Phoenix—Electric Supply, Inc., 202 So. 7th Ave. AL 2-2343  
Calif., Arcata—Industrial Electric Service Co., 960 Fourth St.  
Calif., Fresno—Electric Motor Shop, 253 Fulton St., Phone 3-1154  
Calif., Glendale—Air Associates, Inc., 1231 Air Way. CI 4-4151  
Calif., Los Angeles—Andrews Hardware & Metal Co., 334 So. Main St. MU 6111  
Calif., Los Angeles—Radio Products Sales, Inc. 1501 So. Hill St. RI 9-7471  
Calif., Los Angeles—Radio Television Supply Co., 341 W. 18th St. RI 8-7131  
Calif., Oakland—Western Electro-Mechanical Co., Inc., 300 Broadway. TE 2-8653  
Calif., Sacramento—Norel Electronics, Inc., 1115 R St. GI 3-4668  
Calif., San Bernardino—Tri-County Electrical Wholesalers, 453 So. I St. Phone 7896  
Calif., San Diego—Pacific Wholesale Electric Co., 702 State St. BE 4-5136  
Calif., San Francisco—C. J. Hendry Co., 27 Main St. DO 2-4242  
Calif., San Francisco—Phillips & Edwards Electric Corp., 265 Vermont. HE 1-7400  
Colo., Denver—Rvall Electric Supply Co., 500 Lincoln St. AC 2-4521  
Ore., Eugene—Tillman & Booth, Inc., 215 W. Fifth Ave. Phone 5-3301  
Ore., Portland—North Coast Electric Co., 625 N.W. Everett St. BE 3621  
Utah, Salt Lake City—Stuart Electric, 13 East 15th St. HU 5-5424  
Wash., Aberdeen—Industrial Electric Service Co., 319 So. First, Phone 956  
Wash., Seattle—North Coast Electric Co., 131 Jackson St. MU 9444  
Wash., Spokane—Columbia Electric & Mfg. Co., 3420 Ferry Ave. KE 0611  
Wash., Tacoma—Love Electric Co., 1914 Market St. BR 4101

### MINNESOTA RUBBER & GASKET CO., 3630 Wooddale Ave., Minneapolis 16, Minn.

Molded rubber and silicone formed products, O rings, Quadring seals, rubber bonded to metal dipped goods.

## MODERNAIR - NICE

**Branch Office**  
Calif., Tarzana—18633 Ventura Blvd. DI 4-0239  
**Representatives**  
Colo., Denver—C.F.L. Co., 530 E. Alameda Ave. SP 7-4381  
Ore., Portland—Northwest Industrial Sales Co., 222 N.W. Tenth Ave. CA 3-1543

### MODERNAIR CORP., 400 Preda St., San Leandro, Calif.

Controls (compressed air, hydraulic), Cylinders (air, hydraulic), Valves (air power line, hydraulic power line).

**Representatives**  
Ariz., Phoenix—Air-Draulics Co., 31 So. 3rd Ave. at Jefferson  
Calif., Burbank—Elect-Air Tool Co., 310 W. Verdugo Ave.  
Calif., Los Angeles—Circle Seal Supply Co., 4863 Telegraph Rd.  
Calif., Los Angeles—Huddleston Equipment Co., 1148 So. Los Angeles St.  
Calif., Oakland—The H. E. Linney Co., 5801 College Ave.  
Calif., Redding—Gerlinger Steel Supply Co., 1627 Sacramento St.  
Calif., Sacramento—Capital Machine & Welding Co., 88 No. 17th St.  
Calif., San Diego—General Industrial Supply Co., 1115 F St.  
Calif., San Francisco—Charles A. Fowler Co., 979 Bryant St. UN 3-5010  
Calif., San Francisco—Power-Mac Co., 467 So. Van Ness Ave.  
Calif., San Jose—Orchard Supply Hardware, 720 W. San Carlos St.  
Calif., Ukiah—Klamath Machine & Locomotive Works of California, 720 State St.  
Colo., Denver—Plant Equipment Co., 1863 Wazee St.  
Ore., Portland—Western Machinery Corp., 1035 S.E. 9th St.  
Utah, Salt Lake City—Equipment Engineering Co., 1761 So. 8th W.  
Wash., Seattle—F. H. Soderling Co., 1729 First Ave. So.  
Wash., Tacoma—Webster-Robinson Machinery, Puyallup Ave. at A St.

### MOLINE MALLEABLE IRON CO., St. Charles, Ill.

Malleable and promal chains.  
**Representatives**  
B. C., Vancouver—Western Equipment, Ltd., 102 Main St. MA 9440  
Calif., Los Angeles—J. W. Minder Chain & Gear, 6011 So. Central Ave. AD 3-7221  
Calif., San Francisco—Charles A. Fowler Co., 979 Bryant St. UN 3-5010  
Ore., Portland—J. W. Minder Chain & Gear, 307 S.E. Hawthorne Blvd. BE 6-1131  
Wash., Seattle—Chain Gear, Inc., 820-24 First Ave. So. MA 7009

### MOLONEY ELECTRIC CO., 5390 Bircher Blvd., St. Louis 20, Mo.

Transformers.  
**Representatives**  
Calif., Los Angeles—Garland-Affolter Engineering Corp., Subway Terminal Bldg. MI 1864  
Calif., San Francisco—Garland-Affolter Engineering Corp., 58 Sutter St. EX 7-1800  
Ore., Portland—Garland-Affolter Engineering Corp., 1233 N.W. 12th St. CA 3-7349  
Wash., Seattle—Garland-Affolter Engineering Corp., 2603 Western Ave. MU 4950

### MONARCH ELECTRIC CORP., 118 E. First St., Jamestown, N. Y.

Renewable cartridge fuses, Non-renewable cartridge fuses, Renewable cartridge fuse links, Fuse clips, Plug fuses.

**Representatives**  
Calif., Los Angeles—Keeler-White Co., 436 Colyton St. MU 6270  
Calif., San Francisco—Keeler-White Co., 615 Seventh Ave.  
Colo., Denver—L. S. Reed & Co., 1018 Lawrence St. TA 5-3218  
N. Mex., Albuquerque—Ralph B. Black, 4716 Trumble S.E. Phone 5-9625  
Ore., Portland—Keeler-White Co., 322 N.W. Fourth. CA 7-0593  
Wash., Seattle—Keeler-White Co., 1041 Sixth Ave. EL 2367

### MORGANITE, INC., 33-02 48th Ave., Long Island City, N. Y.

Bearings (sleeve).  
**Representatives**  
Calif., Novato—M. R. Johnson, 1415 W. Court. TW 2-3379  
Calif., Santa Ana—C. B. Knispel, 1115 W. 16th St. OX 5-0121

### MORSE CHAIN CO., Ithaca, N. Y.

Chains for drives (roller, silent), Couplings (shaft, flexible), Clutches (industrial overrunning, friction), Reducers, speed (bevel gear, helical gear, worm gear), Sprockets, Transmission, variable speed.

**Representatives**  
Calif., Los Angeles—J. W. Minder Chain & Gear Co., 6011 So. Central Ave. AD 3-7221  
Calif., Maywood—Edward D. Maltby Co., Inc., 4035 E. 52nd St. LO 6-5304  
Calif., San Francisco—Adam-Hill Co., 244-246 Ninth St. MA 4137  
Ore., Portland—J. W. Minder Chain & Gear Co., 307 S.E. Hawthorne Blvd. BE 6-1131  
Ore., Portland—Power Transmission Products, 1107 N.W. 14th Ave. CA 7-1271  
Wash., Seattle—Chain Gear, Inc., 820-824 First Ave. So. SE 8010

### MOTOR GENERATOR CORP., affiliate of HOBART BROTHERS, W. Water St., Troy, Ohio

Battery chargers, Ground power equipment, Power plants.

**Representatives**  
Ariz., Phoenix—Potter-Bowman Co., 213 No. First Ave. AL 4-1383  
Calif., La Jolla—Frank T. Butler, 722 Fern Glen. GL 4-6757  
Calif., Los Angeles—Frod Pelletier Co., 1014 Venice Blvd. RI 9-4471  
Calif., San Francisco—McCormick-Morgan Co., 324 Fifth St. SU 1-6591  
Colo., Denver—Toncray Equipment Co., 1732 Blake St. CH 4-1102  
Ore., Portland—Northern Equipment Co., 208 S.W. Stark. CA 8-3211  
Wash., Seattle—Industrial Products, 2911 1st Ave. So. MA 7488  
Wash., Spokane—Automotive Electric Co., E. 125 Mission Ave. FA 5379

### NATIONAL ELECTRIC PRODUCTS CORP., 2 Gateway Center, Pittsburgh 22, Pa.

Electrical wiring materials.  
**Branch Offices**  
Ariz., Phoenix—603 So. First Ave. AL 8-5778  
Calif., Los Angeles—6400 Corvette St. RA 3-4654  
Calif., San Francisco—400 Potrero Ave. UN 1-1145  
Colo., Denver—3327 Brighton Blvd. TA 5-5530, TA 5-1576  
Ore., Portland—1220 S.W. Stark St. CA 2-3456  
Utah, Salt Lake City—19 W. South Temple. DA 2-2701  
Wash., Seattle—1049 Sixth Ave. So. EL 3776

### NATIONAL SEAL DIV., Broadway at National Ave., Redwood City, Calif.

EM 6-3861  
Fluid drives, Motors (air), Pumps (hydraulic power), Variable speed transmission, Oil and grease seals, Laminated shims, O rings.

**Branch Office**  
Calif., Downey—11634 Patton Rd. TO 2-8163

### NATIONAL-U.S. RADIATOR CORP., HEATING & AIR CONDITIONING DIV., 221 Central Ave., Johnstown, Pa.

Boilers and boiler equipment, Traps (steam).

**Branch Offices**  
Calif., Los Angeles—1250 Wilshire Blvd., Room 502-A. MA 6-0043  
Calif., San Francisco—57 Page St. UN 3-2932  
Colo., Denver—2474 Blake St. TA 5-5168  
Wash., Seattle—334 Boren Ave. No. EL 2961  
**Representatives**  
Ariz., Tucson—Blackmore Sales Co., Inc., 2020 E. 13th St. MA 4-2475  
Ida., Boise—Richardson Equipment Co., 612 Front St. Phone 3-9431  
Ore., Portland—W. R. Norte Co., 2225 N.E. Broadway. AT 8-3459, AT 7-3458  
Utah, Salt Lake City—Thermal Engineering Co., 1492 Major St. IN 6-8793  
Wash., Spokane—D. E. Weidner, 514 Realty Bldg. MA 6245

### NATIONAL U. S. RADIATOR CORP., see CYCLOTERM DIV.

### NEW DEPARTURE DIV., GENERAL MOTORS CORP., 269 No. Main St., Bristol, Conn.

Bearings (ball).  
**Branch Offices**  
Calif., Berkeley—1716 Fourth St. LA 6-8750

Calif., Los Angeles—5085 Gifford Ave. LU 2-2301  
Wash., Seattle—5000 1st Ave. So. LA 5920

### NEW HAMPSHIRE BALL BEARINGS, INC., Peterborough, N. H.

Precision instrument ball bearings.  
**Branch Office**  
Calif., Pasadena—432 No. Lake Ave. RY 1-9051

### NEW PRODUCTS CORP., 3636 Oakton St., Skokie, Ill.

Flow control valves, Flow dividers, Hydraulic valves.  
**Representatives**  
Calif., Millbrae—Fluid Products Co., 115 Park Pl. JU 3-9519  
Calif., San Francisco—Calpacific Equipment, 50 Hawthorne St. GA 1-0730  
Ore., Portland—Harlan C. McKay Co., 1901 N.W. 26th Ave. CA 7-5565  
Wash., Spokane—Calkins Mfg. Co., 1102 Atlantic

### NEW YORK AIR BRAKE CO., THE, KALAMAZOO DIV., 9000 E. Michigan Ave., Kalamazoo, Mich.

Controls, Cylinders, Motors, Pumps, Valves (oil hydraulic).

**Representatives**  
Calif., Oakland—The Rucker Co., 4700 San Pablo Ave. OL 3-5221  
Calif., South Gate—The Rucker Co., 4956 Firestone Blvd. LO 4-2521  
Ore., Portland—Rucker Co., 911 N.W. Hoty Ave. CA 3-0205  
Wash., Seattle—The Rucker Co., 1000 4th Ave. So. MA 2738

### NEW YORK BELTING & PACKING CO., 1 Market St., Passaic, N. J.

Complete line of all types of transmission belting (rubber) including flat, V, timing, connected-type and link-type, for every industrial power transmission requirement; all types of industrial rubber hose.

See advertisement on page 27

**Branch Offices**  
Calif., Los Angeles—4559 E. Sheila St. AN 9-4362  
Calif., Oakland—4545 Oak Port St. KE 2-8245  
Calif., San Francisco—6025 Third St. MI 8-3424  
Colo., Denver—1635 17th St. KE 4-4111  
Ore., Portland—6725 N.E. 25th Ave. PR 0260

**Representatives**  
Calif., Fresno—Central Supply Co., 424 M St. AM 8-4765  
Calif., Los Angeles—Degen-Fiege Co., 4559 E. Sheila St. AN 9-0781  
Calif., Oakland—Viking Supply Co., 4545 Oak Port St. KE 2-8245  
Colo., Denver—Hendrie & Bolthoff Co., 1635 17th St. KE 4-4111  
Ore., Klamath Falls—Moly & Van Dyke, Inc., 638 Klamath Ave.  
Ore., Portland—Northwest Chain & Sprockets, Inc., 31 N.W. First Ave. CA 8-3367  
Wash., Seattle—Northwest Chains & Sprockets, Inc., 3825 E. Marginal Way. MA 8629

### NICE BALL BEARING CO., 30th and Hunting Park Ave., Philadelphia 40, Pa.

Ball bearings, Retainers, Shafts.  
**Distributors**  
Ariz., Phoenix—Garrett Supply Co.  
Ariz., Phoenix—Edward D. Maltby Co., Inc.  
Calif., Antioch—Bearing Supply  
Calif., Fresno—General Bearings Co.  
Calif., Long Beach—Edward D. Maltby Co.  
Calif., Long Beach—Pacific Bearings Co.  
Calif., Los Angeles—Andrews Hardware & Metal Co.  
Calif., Los Angeles—Bearing Sales Co.  
Calif., Los Angeles—Bearing Specialty Co.  
Calif., Los Angeles—Garrett Supply Co.  
Calif., Los Angeles—Edward D. Maltby Co., Inc.  
Calif., Los Angeles—Pacific Bearings Co.  
Calif., Maywood—Bearing Specialty Co.  
Calif., Maywood—Edward D. Maltby Co., Inc.  
Calif., Oakland—Bearing Engineering Co.  
Calif., Oakland—Bearing Specialty Co.  
Calif., Sacramento—Bearing House  
Calif., Sacramento—Bearing Specialty Co.  
Calif., San Bernardino—Pacific Bearings Co.  
Calif., San Diego—Edward D. Maltby Co., Inc.  
Calif., San Francisco—Bearing Engineering Co.  
Calif., San Francisco—Bearing Specialty Co.  
Calif., San Francisco—C. W. Marvedel



## NORGREN - PHILADELPHIA GEAR

Calif., San Jose—Masterson Bearing Co.  
Calif., San Leandro—Republic Supply Co. of Calif.  
Calif., Stockton—Bearing Supply Co.  
Ore., Eugene—Bearing Sales & Service, Inc.  
Ore., Portland—Bearing Sales & Service, Inc.  
Ore., Portland—J. E. Haseltine & Co.  
Ore., Roseburg—Bearing Sales & Service, Inc.  
Wash., Aberdeen—Bearing Sales & Service, Inc.  
Wash., Everett—Bearing Sales & Service, Inc.  
Wash., Longview—Bearing Sales & Service, Inc.  
Wash., Seattle—Bearing Sales & Service, Inc.  
Wash., Seattle—J. E. Haseltine & Co.  
Wash., Seattle—Cragin & Company  
Wash., Spokane—J. E. Haseltine & Co.  
Wash., Tacoma—Bearing Sales & Service, Inc.

### NORGREN, C. A., CO., 3400 So. Elati, Englewood, Colo.

Equipment for processing compressed air, Filters, Pressure regulators, Lubricators (air tools, air cylinders, other air operated equipment and machine components), Relief valves, Flow control valves, Needle valves.

**Representatives**  
Calif., Burlingame—Airdraulic Ind. Prod. Co., 1119 Carolan Ave. DI 3-2022  
Calif., South Pasadena—Teglen Engineering Co., 1942 Huntington Dr. RY 1-2856  
Colo., Denver—E. C. Wild Co., 695 So. Garfield St. SF 7-2852  
Ore., Portland—Power Transmission Products, 1107 N.W. 14th Ave. CA 7-1271  
Wash., Seattle—George W. Warden Co., 1805 Dexter Ave. AL 0622, 1441

### NUMATICS, INC., Milford, Mich.

Complete line of heavy duty air control valves, two-way, three-way, four-way, solenoid, pilot, hand, cam, fast operated.

**Representatives**  
Calif., Oakland—Ditzen Engineering & Sales Co., 6002 Telegraph Ave. OL 3-8262  
Calif., Sun Valley—Numatic Engineering, 10645 Wixom. ST 7-6114  
Wash., Seattle—Langlois Air & Hydraulic Co., 415 Denny Way. MU 3918

### O. Z. ELECTRICAL MFG. CO., INC., 262 Bond St., Brooklyn 17, N. Y.

Insulating bushings, Conduit fittings, Cable terminators, Solderless connectors, Power connectors, Grounding devices, Interlocked armor cable fittings.

**Branch Plant**  
Calif., San Francisco—749 Bryant St. GA 1-7846

**Representatives**  
Calif., Los Angeles—Agencies Co., 836 Traction Ave. HI 1925  
Calif., San Francisco—Eichorn & Melchior, Inc., 749 Bryant St. DO 2-1038, -9  
Colo., Denver—Harry F. Ream, 1028 Champa St. CH 0558  
Ore., Portland—Wm. O. Proby & Associates, 1308 N.W. Everett St. CA 8-7261  
Wash., Seattle—Wm. O. Proby & Associates, 2915 13th Ave. S.W. EL 3483

### OHIO CARBON CO., 12508 Berea Rd., Cleveland 11, Ohio

Motor, generator brushes (carbon, graphite, metal graphite), Self lubricating bearings (carbon graphite).

**Representatives**  
Calif., Los Angeles—Tri State Supply, 544 So. San Pedro. MU 2354  
Calif., San Francisco—Tri State Supply, 554 Bryant St.  
Wash., Seattle—Tri State Supply, 318 Occidental.

### OILGEAR CO., THE, 1560 W. Pierce St., Milwaukee 4, Wis.

Fluid power cylinders, motors, pumps, transmissions and valves.

**Branch Offices**  
Calif., Los Angeles—727 W. 7th St. VA 8544  
Wash., Seattle—914 Arctic Bldg. MA 7445

### OKONITE CO., THE, 220 Passaic St., Passaic, N. J.

Wire and cable (electric).

**Branch Offices**  
Calif., Los Angeles—427 W. 5th St. MI 9677  
Calif., San Francisco—701 Phelps St. VA 4-7474  
N. Y., New York—501 Fifth Ave. MU 7-0400 (Serves Alaska and Hawaii)  
Ore., Portland—880 Pittcock Block. CA 8-3173  
Wash., Seattle—1011 Securities Bldg., 1904 Third Ave. SE 5277

**Representatives**  
Colo., Denver—Sales Engineers Co., 211-212 Waxes St. AC 2-4893  
Utah, Salt Lake City—Sales Engineers Co., 2269 McClelland St. Phone 2-2419

### D. W. ONAN & SONS, INC., 2515 University Ave. S.E., Minneapolis 14, Minn.

Gasoline and diesel engines and accessories. Electric generating plants (gasoline and diesel), controls and accessories.

**Branch Offices**  
Calif., Palo Alto—1588 Edgewood Dr. DA 2-0127

Colo., Denver—2800 Tennyson. GL 5-6786  
Ore., Portland—401 S.E. 50th Ave. BE 6-2801

**Distributors**  
Ariz., Phoenix—Aztec Equipment, 2525 Westward Blvd.

Calif., San Francisco—Ets-Hokin & Galvan, 551 Mission St.

Colo., Denver—Hendrie & Bolthoff, 1635 17th St.

Colo., Denver—B. K. Sweeney Co., 1601 23rd St.

Mont., Billings—Great Northern Tool & Supply Co., 2224 Minnesota Ave.

Mont., Great Falls—Branch Motor Supply, 104-106 First Ave. So.

Nev., Reno—Air Service Co., 241 So. Virginia St.

N. Mex., Albuquerque—Industrial Supply Co., 1647 Second St. N.W.

Ore., Portland—Sparks Powerlight, Inc., 1624 S.E. Grand Ave.

Utah, Salt Lake City—Motor Mercantile Co., 54 W. Seventh St.

Wash., Seattle—Fremont Electric Co., 944 No. 34th St.

Wyo., Casper—Power Service Co., 335 So. Ash St.

### ORR & SEMBOWER, INC., Morgantown Rd., Reading, Pa.

Automatic packaged boilers, steam and hot water (15-500 hp.), Complete automatic lumber kiln units, Power-Pak boilers (10-25 hp.).

**Branch Office**  
Utah, Salt Lake City—140 W. Second So. DA 2-5255

**Representatives**  
Calif., Los Angeles—Fred S. Renauld & Co., 8115 So. Western Ave. PL 2-6181

Calif., San Francisco—Edgar Martin Co., 50 Hawthorne St. YU 2-5680

Ida., Boise—Richardson Equipment Co., 612 Front St. Phone 3-9431

Ore., Portland—Ponder Oil Burner Co., 309-15 N.E. Wygant. AT 8-4500

Tex., El Paso—General Equipment Sales, 605 Mills Bldg. Phone 2-5161

Utah, Salt Lake City—Thermal Engineering Co., 1492 Major St. IV 6-8793

Wash., Seattle—Superior Engineering Co., 15th & E. Madison. CA 3300

### ORTMAN-MILLER MACHINE CO., INC., 19 143rd St., Hammond, Ind.

Cylinders (air, hydraulic).

**Representatives**  
Calif., Oakland—Rucker Co., 4700 San Pablo. OL 3-5221

Calif., South Gate—Rucker Co., 4956 Firestone Blvd. LO 4-2521

Colo., Denver—Clyde P. Elliott, 661 Delaware St. SK 6-4098

Utah, Salt Lake City—Robert Taylor & Sons, 1077 So. Main St. Phone 6-3090

Wash., Seattle—Rucker Co., 1000 Fourth Ave. So. MA 2783

### PANDUIT CO., 10132 So. Wash-tenan Ave., Chicago 43, Ill.

Ducts (wiring), Raceway (wiring).

**Representatives**  
Calif., Los Angeles—Gough Industries, Inc., P. O. Box 2768, Terminal Annex

Calif., Los Angeles—Graybar Electric Co., Inc., 210 Anderson

Calif., Sacramento—Valley Electric Co., 1831 18th St.

### PARKER APPLIANCE CO., 17325 Euclid Ave., Cleveland 12, Ohio

Tube and hose fittings, Hydraulic accumulators and check valves.

**Representatives**  
Calif., Glendale—Haskel Eng. & Supply, 1236 So. Central Ave.

Calif., Los Angeles—Metropolitan Supply Co., 353 E. Second St.

Calif., San Francisco—General Mach. & Supply, 1346 Folsom St.

Calif., San Francisco—Haskel Eng. & Supply, 225 11th St.

Colo., Denver—Metal Goods Corp., 4343 Holly St.

Ore., Portland—Power Transmission Prod., 1107 N.W. 14th Ave.

Wash., Seattle—Palmer Supply Co., 222 Westlake, No.

### PARKERSBURG-AETNA CORP., see AETNA BALL & ROLLER BEARING CO., DIV.

### PARKER, SID E., BOILER MFG. CO., INC., 2035 E. 37th St., Los Angeles 58, Calif. AD 3-4211

Hot water boilers, Steam boilers, Water softeners.

**Representatives**  
Calif., Berkeley—Clyde Co., 920 Grayson St. TH 5-6130

Calif., Sacramento—Stocker's Boiler & Welding Works, 500 Broadway. GI 2-3062

Colo., Denver—E. P. Murr Co., 2542 West 28th Ave. GE 3-3554

N. Mex., Albuquerque—Hale Sanitary Supply, 1024 No. 4th St. Phone 7-9555

Ore., Portland—Russ Chamberlin Co., 234 S.E. 12th Ave. BE 2-7124

Wash., Seattle—Brooks & Co., 2606 Second Ave. SE 1570

Wash., Tacoma—New Era Equipment Co., No. 27th & Proctor. PR 1425

### PASS & SEYMOUR, INC., Syracuse 9, N. Y.

Wiring devices.

**Branch Office**  
Calif., Los Altos—56 Los Altos Ave. WH 8-7041

**Representatives**  
Calif., Los Angeles—J. G. Pomeroy Co., 1004 E. Fourth St. MA 5-1105

Colo., Denver—Sales Engineers, Inc., 211-212 Wazee St. AC 2-4893

Ore., Portland—Shaffer & Nelson, 139 S.E. Taylor St. BE 4-7437

Wash., Seattle—Shaffer & Nelson, 312 Occidental Ave. MU 0-1867

Wash., Spokane—Shaffer & Nelson, W. 1835 Broadway. FA 5395

### PASTUSHIN INDUSTRIES, INC., 5651 W. Century Blvd., Los Angeles 45, Calif.

Hercules boilers.

**Branch Office**  
Calif., San Francisco—Trident Engr., 16 Beale St. YU 6-6558

### PEERLESS ELECTRIC CO., THE, 1401 W. Market St., Warren, Ohio

Motors (electric DC, electric poly-phase and single-phase AC).

**Representatives**  
Calif., Los Angeles—Hoyt & Sweet, 1132 E. 12th St.

### PERFECTING SERVICE CO., 332 Atando Ave., Charlotte 6, N. C.

Steam traps, Revolving joints, Air pressure regulators, Air lubricators, Air filters, Air drain traps, Air dehumidifiers, Flexible metal bronze hose, Quick couplings.

**Representatives**  
Calif., Los Angeles—Thermal Engineering & Equipment Co., 5469 San Fernando Rd. W. Calif., San Francisco—Charles M. Bailey Co., 667 Folsom St.

### PERFECTION GEAR CO., see AMERICAN STOCK GEAR DIV.

### PHELPS DODGE COPPER PRODUCTS CORP., 300 Park Ave., New York, N. Y.

Copper and copper alloy pipe and tube, Condenser and heat exchanger tube, Power and communications cable, Building wire and cable, Magnet wire, Bare copper (wire, bus bars, extrusions, etc.).

**Branch Offices**  
Calif., Los Angeles—6100 So. Garfield Ave. PA 1-1191

Calif., San Francisco—369 Pine St. EX 2-7379

Ore., Portland—1436 N.W. 16th Ave. CA 2-4279

Wash., Seattle—505 Skinner Bldg. EL 6790

### PHILADELPHIA GEAR WORKS, INC., Erie Ave. and G Sts., Philadelphia 34, Pa.

Industrial gears, Speed reducers, Speed increasers, Gearmotors, Flexible couplings, Limitorque automatic valve controls, Mixer drives and assemblies.

**Branch Offices**  
Calif., San Francisco—1485 Bayshore Blvd. JU 4-7748

Ore., Portland—103 S.W. Front Ave. CA 8-4311

Utah, Salt Lake City—375 S.W. Temple St. DA 2-4311  
Wash., Seattle—1016 First Ave. No. EL 4949  
Representative  
Colo., Denver—Andrew T. Lobel, 1700 15th St. MA 3-3221

**PIC DESIGN CORP.**, 477 Atlantic Ave., East Rockaway, N. Y.  
Precision instrument gears and parts.  
Representative  
Calif., Pasadena—In/Right Engineering Co., 180 E. California St. SY 3-5995

**PORTER, H. K., CO., INC.**, see W-5 FITTINGS DIV.

**POWERS REGULATOR CO.**, 3400 Oakton St., Skokie, Ill.

Controls (automatic temperature, humidity and pressure) for heating, air conditioning and processes, instruments (measuring and testing), Regulators (pressure, temperature), Traps (steam) Valves (air power line, hydraulic power line).

Branch Offices  
Calif., Los Angeles—3200 W. Temple St. DU 4-4187  
Calif., San Francisco—161 Missouri St. UN 1-7471  
Colo., Denver—240 Kalamath St. MA 3-3218  
Ore., Portland—2809 N.E. 58th St. AT 5-6063  
Utah, Salt Lake City—204 Dooly Bldg. EM 4-6421  
Wash., Seattle—511 Second Ave. W. MU 8850  
Representatives  
Mont., Billings—C. L. Boyer & Co., 1002 Division St. Phone 2-3941  
N. Mex., Albuquerque—Control & Equipment Co., 5206 Constitution Ave. N.E. Phone 6-0753

**PRECISION RUBBER PRODUCTS CORP.**, 3110 Oakridge Dr., Dayton 7, Ohio

O rings, Dyna-Seals  
Representatives  
Calif., Beverly Hills—Airsupply Co., 9815 Wilshire Blvd. BR 2-8111  
Calif., Palo Alto—Airsupply Co., 230 Town & Country Village. DA 2-9004  
Calif., San Diego—Airsupply Co., P. O. Box 6296  
Colo., Denver—Landes, Zachary & Peterson, 275 Kalamath St. MA 3-6203  
N. Mex., Albuquerque—Landes, Zachary & Peterson, 1609 Second St. N.W.  
Utah, Salt Lake City—Landes, Zachary & Peterson, 153½ W. Second St.  
Wash., Seattle—Airsupply Co., 201 Boren Ave. No. MA 8968

**PUNCH-LOK CO.**, 321 No. Justine St., Chicago 7, Ill.

Clamps (hoses).  
Branch Offices  
Calif., Los Angeles—615 So. Normandie Ave.  
Representatives  
Calif., Fresno—Valley Pipe & Supply Co., P.O. Box 551  
Calif., Los Angeles—Howard Supply Co., 5125 Santa Fe Ave.  
Calif., Oakland—Howard Supply Co., 61 Madison Ave.  
Calif., San Francisco—Monarch Supply Co., 277 Pennsylvania Ave.  
Colo., Denver—Union Supply Co., 5460 Colorado Blvd.  
Ida., Wallace—Gardner Supply Co., 824 Bank St.  
Mont., Butte—Butte Machinery Co., 510 E. Aluminum St.  
N. Mex., Anthony—AAA Ammonia Service, Inc., P.O. Box 203  
N. Mex., Carlsbad—Mine Supply Co., 402 So. Mine St.  
Ore., Portland—Woodbury & Co., 8851 No. Lagoon-Swan Island, P.O. Box 8858  
Utah, Salt Lake City—Mountain States Rubber Co., 121 Social Hall Ave.

**QUINCY COMPRESSOR CO.**, 217 Maine St., Quincy, Ill.

Air compressors (portable, stationary).  
Representatives  
Ariz., Phoenix—Western Machinery Co., 820 No. 17th St. AL 3-4101  
Calif., Los Angeles—Esack Manufacturing Co., 1950 Santa Fe Ave. MA 3-3341  
Calif., Los Angeles—Sharpe Manufacturing Co., 1224 Wall St. RI 9-4368  
Calif., San Francisco—Quincy Compressor West Coast Distributors, 1185 Mission St. UN 1-3030  
Ore., Portland—Rogers Machinery Co., 5035 S.E. 17th Ave. FI 6478

**RACINE HYDRAULICS & MACHINERY, INC.**, 2000 Albert St., Racine, Wis.

Hydraulic pumps (variable volume vane type), Pressure boosters, Hydraulic valves, Power units, Complete package units.

Representatives  
Calif., Los Angeles—Ralph W. Atkinson Co., 3713 Santa Fe Ave.  
Calif., San Francisco—Ralph W. Atkinson Co., 655 Folsom St.  
Colo., Denver—Landes, Zachary & Peterson, 275 Kalamath St.  
Ore., Portland—Hydraulic & Air Equipment Co., 2316 N.W. Sawyer St.  
Utah, Salt Lake City—Landes, Zachary & Peterson, 153½ W. Second St.  
Wash., Seattle—Hydraulic & Air Equipment Co., 2450 Sixth Ave. So. Room 101

**RAMSEY CHAIN CO., INC.**, 55 Broadway, Menands, N. Y.  
Chains for drives (silent transmission), Couplings (shaft, flexible), Sprockets.

Representatives  
Calif., Pasadena—Shaw Engineering Sales Co., 19 No. Catalina Ave., Rm. 217  
Calif., South Gate—Power Transmission Equipment Co., 4501 Firestone Blvd.  
Ore., Portland—Western Industrial Manufacturers Sales Co., 714 N.E. First Ave.

**RANDALL GRAPHITE BEARINGS, INC.**, Greenlawn and Lake St., P.O. Box 839, Lima, Ohio

Bearings (sleeve, bronze), Collars (shaft), Pillow blocks.

Branch Office  
Representatives  
Calif., Santa Barbara—66 Rametto Rd. WO 9-0415  
Calif., Los Angeles—Edward D. Maltby Co., Inc., 1718 So. Flower St. RI 7-9191  
Calif., San Francisco—Allan P. James Co., 430 Ninth St. MA 1-5934  
Wash., Seattle—Bearing Engineering & Supply Co., 2548 Airport Way at Lander St.  
Wash., Seattle—Brown Bearing Co., 2440 First Ave. So.

**RAYBESTOS DIV., RAYBESTOS-MANHATTAN, INC.**, P. O. Box 1021, Bridgeport 2, Conn.

Clutch facings (molded Ray-Lok, semi-metallic, full-metallic), CoRayMell clutch facing buttons, Brakes, Woven roll lining, Molded roll lining, Brake blocks, Brake lining, CoRayMell brake band buttons.

Branch Offices  
Calif., Los Angeles—156 W. Adams Blvd. RI 7-6394  
Calif., San Francisco—600 Fulton St. WA 1-1656  
Colo., Denver—1153 Bannock St. AM 6-2306  
Ore., Portland—1116 N.W. 17th Ave. CA 8-7529  
Wash., Seattle—1525 11th Ave. PR 9300

Representatives  
Ariz., Phoenix—H. T. Jones, 1509 E. Almeria Rd.  
Calif., Anaheim—J. H. Miller, Jr., 8282 Keys Lane. JA 7-6146  
Calif., Fresno—N. L. Zeyen, 3644 No. Ninth  
Calif., Glendora—W. E. Holley, 19302 E. Sierra Madre Dr. ED 5-2481  
Calif., Mountain View—O. O. Oliver, 1654 Lee Dr. YO 7-5854  
Calif., Sacramento—R. D. Albright, 1400 Arroyo Grande Dr. IV 7-6095  
Calif., San Gabriel—C. J. Masson, 1305 So. Palm Ave. AT 7-1654  
Calif., Whittier—R. W. Moreno, 8225 Shady-side Ave.  
Colo., Denver—E. C. Faulds, 2937 So. Harrison. SK 6-2202  
Ore., Eugene—R. P. Amann, 3005 Mill St. EU 4-5065  
Ore., Portland—F. V. Seely, 6448 S.W. 47th Pl. CH 4-8426  
Wash., Bellevue—W. T. Jensen, 4406 149th Ave. S.E. GI 9456

**RAYBESTOS-MANHATTAN, INC.**, 61 Willet St., Passaic, N. J.

Beltting, drives (composition, rubber), Belts, V (composition, rubber), Hoses (air, flexible metallic, hydraulic).

Branch Offices  
Calif., Los Angeles—4651 Pacific Blvd. LU 8-4254  
Calif., San Francisco—131 Mission St. YU 8-6114  
Colo., Denver—4500 York St. AC 2-8264  
Ore., Portland—1220 S.W. Stark St. AT 4107  
Wash., Seattle—2440 Sixth Ave. So. EL 8725

**REEVES PULLEY CO. DIV., RELIANCE ELECTRIC & ENGINEERING CO.**, 1225 Seventh St., Columbus, Ind.

Bases (motor, adjustable), Variable speed Motors, Variable speed motor pulleys, Variable speed transmissions, Flexi-speed drives, Variable speed drives.

See advertisement on page 18

Branch Offices  
Calif., Burlingame—1525 Adrian Rd. OX 7-5341  
Calif., Los Angeles—6035 Olympic Blvd. RA 3-8454

Representatives  
Colo., Denver—Hamilton Associates, 1236 Elati St. CH 4-1505  
Ore., Portland—Western Gear Corp. of Oregon, 930 S.E. Oak St. VE 3177  
Utah, Salt Lake City—Lundin & May Foundry Co., 454 W. Fifth No. EL 9-2005  
Wash., Seattle—Shaffer & Nelson, 312 Occidental Ave. MU 0186, -7

**RELIANCE ELECTRIC & ENGINEERING CO.**, 24701 Euclid Ave., Cleveland 17, Ohio (also see REEVES PULLEY CO. DIV.)

Controls (electric motor), Gearmotors, Totally-protected motors (AC), Super-T motors (DC), Motor generator sets, Adjustable-speed motors, Brake-motors, Variable-speed drives, Variable-speed transmissions.

Sales Offices  
Ariz., Phoenix—H. & B. Engineering Sales Co., 21 East Durango  
Calif., Los Angeles—6035 E. Olympic Blvd. RA 3-8454  
Calif., San Francisco—1525 Adrian Road, Burlingame, Calif. OX 7-5341  
Colo., Denver—Peterson Co., 4949 Colorado Blvd. DE 3-5434  
Ida., Boise—C. W. Silver Co., 1118 No. 20th St. Phone 2-6947  
N. Mex., Albuquerque—Boyd Industrial Engineering, Inc., P. O. Box 598, 112 W. Granite St. Phone 3-2247  
Ore., Portland—Shaffer & Nelson, 139 S.E. Taylor St. BE 4-7437  
Utah, Salt Lake City—Clarence W. Silver Co., 550 W. 1st South St. EL 5-6373  
Wash., Seattle—Shaffer & Nelson, 312 Occidental Ave. MU 0186  
Wash., Spokane—Shaffer & Nelson, P. O. Box 198. FA 7-9528

**REMCO MFG. CO.**, 1006 Lakeville Hwy., P. O. Box 658, Petaluma, Calif. PO 2-6615

Heavy duty air-hydraulic cylinders (4 in. through 12 in.), Telescopic hydraulic hoists (two to five stage), Custom made cylinders of all types, Rodpak metallic packing.

See advertisement on page 99

Representatives  
Calif., Eureka—Fred E. Barnett Co., Broadway and Harris  
Calif., San Francisco—Fred E. Barnett Co., 4455 Custer Ave.  
Calif., Ukiah—Fred E. Barnett Co., No. Highway 101, P. O. Box 548  
Ore., Klamath Falls—Fred E. Barnett Co., 600 Spring St.  
Ore., Portland—Fred E. Barnett Co., 2005 S.E. Eighth Ave.

**RENCO-TOLEDO, INC.**, 3358 W. Alexis Rd., Toledo 13, Ohio

Controls (compressed air, hydraulic), Cylinders (air), Fittings and couplings (air), Motors (air), Valves (air power line).

Representatives  
Colo., Denver—Landes, Zachary & Peterson Co., 275 Kalamath St.  
Wash., Seattle—F. P. Rogers & Co., 520 First Ave. So.

**REPUBLIC ELECTRIC & DEVELOPMENT CO.**, 2627 Western Ave., Seattle 1, Wash.

Electric controls, Switchgear, Variable speed drives.

## REPUBLIC STEEL - RUCKER

### REPUBLIC STEEL CORP., STEEL & TUBES DIV., 224 E. 131st St., Cleveland 8, Ohio

Tubing, pressure (including boiler tubing, heat exchanger and condenser tubing), Tubing (electrical metallic), Conduits (rigid threaded).

#### Branch Offices

Calif., Los Angeles—2900 E. 44th St. LU 2-6276

Calif., San Francisco—Rialto Bldg. GA 1-8728

Colo., Denver—Continental Oil Bldg. MA 3-5289

Wash., Seattle—White-Henry-Stewart Bldg. MA 5653

#### Representatives

Colo., Denver—C. D. Belt & Co., 1601 So. Glencoe St. SK 6-9421 (for electrical products)

Wash., Seattle—Shaffer & Nelson Co., 312 Occidental Ave. MU 0186 (for electrical products)

### RESISTOFLEX CORP., Roseland, N. J.

Plastic lined hose, Plastic lined fittings.

#### Branch Offices

Calif., Berkeley—1605 Solano Ave. LA 4-0262

Calif., Burbank—2919 Empire Ave. VI 9-4651

Calif., Los Angeles—Western Fibrous Glass Products Co., 4423 Fruitland Ave. LU 8-3211

Calif., San Francisco—Western Fibrous Glass Products Co., 739 Bryant St. SU 1-5967

Wash., Seattle—Jack Ogle Co., 105 Orcas St. MO 2030

### REULAND ELECTRIC CO., 3001 W. Mission Rd., Alhambra, Calif. CU 3-4171

Electric motors, Grinders and buffers, Magnetic brakes, Motors, reducers.

#### Branch Office

Calif., Oakland—1240 E. 12th St. KE 4-2233

#### Representatives

Ariz., Phoenix—Air-Draulics Co., 3135 No. 29th Ave. AL 8-6441

Ore., Portland—J. A. Tudor & Assoc., Inc., 1004 S.E. Belmont St. BE 2-1188

Wash., Seattle—J. A. Tudor & Assoc., Inc., 2605 Western Ave. SE 5520

### REVCO, INC., 1900 Lyndale Ave. So., Minneapolis 5, Minn.

Zero-Max variable speed reducers and control devices, Tork-O-Stet overlock protectors (slip clutches).

#### Representatives

Calif., Los Angeles—R. Meusdorffer & Associates, 4625 Melrose Ave. NO 5-4193

Calif., Fresno—William H. Citrin, 2253 W. Barstow. BA 7-0025

Ore., Portland—W. G. Ballantyne Co., 103 S.W. Front Ave. CA 8-4311

### RHOADS, J. E., & SONS, 2100 W. Eleventh St., Wilmington 99, Del.

Balting (Tannets flat, Power flat, Tanastic, Gripotan, Powerhold, Texalon, Gilt Edge, Stronghold).

#### Representative

Ore., Portland—C. L. Koerner, 12200 S.E. Outfield Rd. EV 1-8773

### RILEY STOKER CORP., 9 Neponset St., Worcester, Mass.

Boilers and boiler equipment.

#### Representatives

Calif., Los Angeles—R. G. Meyler Corp., 510 W. Sixth St. TR 1831

Calif., San Francisco—Burnstead-Woolford Co., 55 New Montgomery St. SU 1-6444

Colo., Englewood—J. F. White Engineering Corp., P. O. Box 144. SU 1-7829

Ore., Portland—Burnstead-Woolford Co., 320 S.W. Stark St. CA 8-6686

Utah, Salt Lake City—Pace-Turpin & Co., 726 So. Third St. DA 2-5595

Wash., Seattle—Burnstead-Woolford Co., 1411 Fourth Ave. EL 4915

### RIVETT LATHE & GRINDER, INC., 18 Riverview Rd., Brighton 35, Mass.

Cylinders (air, hydraulic), Valves (air, hydraulic), Power units (hydraulic).

#### Representatives

Calif., Bell—Paul-Munroe Co., 6430 E. Gage Ave. LU 7-5226

Calif., Oakland—Ditzen Engineering & Sales, 6002 Telegraph Ave. OL 3-8262

### ROBBINS AVIATION, 1735 W. Florence Ave., Los Angeles 47, Calif. PL 8-1171

Valves (air power line, hydraulic power line, metering).

#### Representative

Wash., Seattle—A. F. Woolsey, 84 Madison St. EL 7061

### ROBBINS & MYERS, INC., 1345 La-gonda Ave., Springfield, Ohio

Generators (electric), Motors (electric, single phase, polyphase, DC, open-protected, totally-enclosed, and explosion-proof).

#### Representatives

Calif., Los Angeles—R. Meusdorffer, 8468 Melrose Pl. NO 5-4193

Calif., San Francisco—C. W. Boswell, 1139 Mission St. HE 1-3435

Colo., Denver—Howard Toncray, 1732 Blake St. CH 4-1102

### ROBERTSHAW-FULTON CONTROLS CO., ACRO DIV., 2040 E. Main St., Columbus, Ohio

Switches, automatic and electric.

#### Branch Office

Calif., North Long Beach—100 Victoria Ave. NE 6-8301

#### Representatives

Ariz., Phoenix—H. G. Sheffer, P. O. Box 1587. Phone 2-4457

Calif., San Francisco—R. H. Fisher Sales Co., 721 Clementina St. UN 1-2569

### ROBERTSHAW-FULTON CONTROLS CO., INSTRUMENT DIV., 2920 No. Fourth St., Philadelphia 33, Pa.

Controls (compressed air, electric), Instruments (controlling, indicating, measuring, recording, testing).

#### Branch Office

Calif., Lynwood—3101 Imperial Highway. NE 6-9791

#### Representatives

Calif., Orinda—Stillson Associates, 33 Meadow-park Ct. CL 4-3751

Colo., Denver—Automatic Control & Equipment Co., 6750 Pecos St. GE 3-6436

Mont., Billings—Continental Laboratories, Inc., 516 Fourth St. W. BI 9-1394

N. Mex., Albuquerque—Steel & Engineering Products Co., 1602 Second St., N.W. Phone 2-7863

Ore., Portland—Tower Equipment Co., P.O. Box 5766. OL 4-1745

Utah, Salt Lake City—Midgley-Huber, 44 W. Eighth St. St. Phone 2-2412

Wash., Seattle (Mercer Island)—Tower Equipment Co., P.O. Box 158. AD 1460

### ROBERTSHAW-FULTON CONTROLS CO., see also FULTON SYLPHON DIV.

Cables (high temperature, aircraft, hookup, coaxial), Wires and cables (asbestos, varnished-cambric, insulated, power, control, lighting).

#### Branch Offices

Calif., Los Angeles—4020 W. Third. DU 8-8879

Calif., Oakland—Oakland Municipal Airport, P. O. Box 2308. SW 8-2955

Wash., Seattle—8031 Dibble Ave. DE 1369

### ROCKBESTOS PRODUCTS CORP., Nicoll and Canner Sts., New Haven 4, Conn.

Cables (high temperature, aircraft, hookup, coaxial), Wires and cables (asbestos, varnished-cambric, insulated, power, control, lighting).

#### Branch Offices

Calif., Los Angeles—4020 W. Third. DU 8-8879

Calif., Oakland—Oakland Municipal Airport, P. O. Box 2308. SW 8-2955

Wash., Seattle—8031 Dibble Ave. DE 1369

### ROCKWELL MANUFACTURING CO., 400 No. Lexington Ave., Pittsburgh 8, Pa.

Pumps (hydraulic power), Regulators (pressure), Transmission, variable speed, Valves (air power line, hydraulic power line, lubricated plug).

#### Branch Offices

Calif., Los Angeles—3136 E. 11th St. AN 1-6107

Calif., San Francisco—525 Market St. GA 1-0071

Colo., Denver—1421 Mile High Center Bldg. AM 6-0441

Wash., Seattle—119 W. Denny Way. GA 6456

### ROLLWAY BEARING CO., INC., 541 Seymour St., Syracuse 4, N. Y.

Bearings (roller).

#### Representatives

Calif., Los Angeles—Harold R. Swanton, Inc., 1706 So. Grand Ave. RI 9-8114

Calif., San Francisco—Harold R. Swanton, Inc., 458 Brannan St. SU 1-0972

Wash., Seattle—Harold R. Swanton, Inc., 2739 4th Ave. So. MU 3232

### ROME CABLE CORP., Ridge St., Rome, N. Y.

Conduits and fittings (electric), Wire and cable (electric).

#### Branch Offices

Calif., Los Angeles—2510 So. Malt Ave. RA 3-3631

Calif., San Francisco—1100 Selby St. VA 6-3589

Utah, Salt Lake City—230 So. Fourth W. EL 9-8811

Wash., Seattle—3430 Fourth Ave. So. SE 3017

### ROOTS-CONNERVILLE BLOWER DIV., DRESSER INDUSTRIES, 900 W. Mount St., Connersville, Ind.

Blowers, Gas pumps (rotary, centrifugal), Vacuum pumps, Gas meters (industrial), Spiraxial compressors.

#### Branch Offices

Calif., San Francisco—1101 Hearst Bldg. DO 2-8352

Ore., Portland—12200 S.E. Outfield Rd. OL 4-8773

#### Representatives

Ariz., Phoenix—Ken Smith Co., P.O. Box 6104. AL 8-0901

Calif., Los Angeles—Preferred Equipment Co., Inc., 5442 Jillion St. RA 3-6391

Colo., Denver—G. M. Wallace & Co., Durham Bldg., AM 6-0386

Ore., Portland—C. L. Koerner, 12200 S.E. Outfield Rd. OL 4-8173

Utah, Salt Lake City—G. M. Wallace & Co., Continental Bank Bldg. EM 4-5611

### GEO. D. ROPER CORP., 340 Blackhawk Park Ave., Rockford, Ill.

Pumps and hydraulic motors (positive displacement, gear).

#### Distributors

Ariz., Phoenix—Salt River Pump & Supply Co., Inc., 2846 Grand Ave. AL 8-3526

Calif., Los Angeles—Pump Engineering Co., 2011 So. Santa Fe Ave. TR 5662

Calif., San Francisco—Woodin & Little, 80 Elmira St. JU 6-6500

Colo., Denver—Colorado Pump & Supply Co., 1449 So. Broadway. PE 3-3709

Colo., Denver—Waukesha Engine & Equipment Co., 4999 Jackson St. FL 5-1641

Mont., Billings—Great Northern Tool & Supply Co., 2224 Minnesota Ave. Phone 2-2141

Mont., Cut Bank—Great Northern Tool & Supply Co. Phone 200

Mont., Great Falls—Smith Equipment Co., 820 Ninth St. No. Phone 2-1713

N. Mex., Albuquerque—New Mexico Tank & Culvert Co., 1717 No. Sixth St. Phone 2-2956

N. Mex., Farmington—Waukesha Engine & Equipment Co., 508 E. Main. Phone 454W

Ore., Portland—Pacific Pumping Co., 526 N.W. Broadway. CA 8-2123

Utah, Salt Lake City—Robert Taylor & Sons, 1077 So. Main St. DA 2-5525

Wash., Seattle—Pacific Pumping Co., 114 W. Harrison. EL 6222

Wyo., Casper—Great Northern Tool & Supply Co., 353 W. Midwest. Phone 3-8356

Wyo., Casper—Waukesha Engine & Equipment Co., 810 Yellowstone Rd. Phone 4076

### ROSS, J. O., ENGINEERING CORP., 444 Madison Ave., New York 22, N.Y.

Dryers, industrial air systems, ovens.

#### Branch Offices

Calif., Los Angeles—6417 Bandini Blvd. RA 3-5146

Wash., Seattle—823 Skinner Bldg. SE 7165

### ROSS OPERATING VALVE CO., 120 E. Golden Gate Ave., Detroit 3, Mich.

Controls (compressed air), Valves (air line).

#### Representatives

Calif., Los Angeles—R. W. Atkinson Co., 3713 Santa Fe Ave. LU 8-5107

Calif., San Francisco—R. W. Atkinson Co., 665 Folsom St. YU 2-5188

Colo., Denver—Alta Engineering Co., 1988 Nome St. EM 6-3557

Ore., Medford—Hydraulic & Air Equipment Co., P. O. Box 1572. Phone 3-4079

Ore., Portland—Hydraulic & Air Equipment Co., 2316 N.W. Savier St. CA 3-3295

Wash., Seattle—Hydraulic & Air Equipment Co., 2450 Sixth Ave. So. MU 1681

### RUCKER CO., THE, 4700 San Pablo Ave., Oakland 8, Calif. OL 3-5221

Test benches, Power units, Centrifuges, Drum filters, Control centers, Controls (compressed air, hydraulic), Cylinders (air, hydraulic), Testing instruments, Hydraulic power pumps, Valves (air power line, hydraulic power line).

#### Branch Offices

Calif., South Gate—4956 Firestone Blvd. LO 4-2621

Ore., Portland—911 N.W. Hoyt St. BE 0205

Wash., Seattle—1600 4th Ave. So. MA 2783



**RUNDEL ELECTRIC CO.**, 230 Adrian Rd., Millbrae, Calif. OX 7-5500  
Special electric control, distribution equipment, Switchgear.

*Representative*  
Calif., Los Angeles—John Hyatt Co., 1709 W. 8th St. DU. 3-7428

**RUSSELL MFG. CO.**, E. Main St., Middletown, Conn.

Conveyor belting, Woven endless belts, Round bevel belts, Timing belts.

*Branch Office*  
Calif., Oakland—555 Fifth Ave. TW 3-8931

*Representatives*  
Calif., Los Angeles—C. R. Davis, 422 E. Third St. MU 3144  
Calif., Palo Alto—T. J. Termine, 352 Addison St. DA 5-6282

**S K F INDUSTRIES, INC.**, Front St. & Erie Ave., Philadelphia 32, Pa.  
Bearings (ball, roller), Pillow blocks.

See advertisement on page 34

*Branch Offices*  
Calif., Los Angeles—3131 So. Hill St. RI 9-3168  
Calif., San Francisco—790 Tennessee St. MI 8-4625

Colo., Denver—1420 18th St. MA 3-3924  
Ore., Portland—1625 N.W. Hoyt St. CA 8-4309  
Wash., Seattle—170 Denny Way. SE 4454

*Distributors*  
Authorized distributors in principal cities.

**S-P MFG. CORP.**, 30201 Aurora Rd., Solon, Ohio

Cylinders (air, hydraulic), Valves (air power line, hydraulic power line), Power chucks.

*Representatives*  
Calif., Los Angeles—V. P. Poleos, P. O. Box 8537, Crenshaw Station. AX 3-4571  
Wash., Seattle—Langlois Air & Hydraulics Co., 415 Denny Way. MU 3918

**SAFE-T-MIKE CORP.**, 2904 Chapman St., Oakland 1, Calif.

Capacitors (fixed electrolytic, a-c. motor starting, high-capacity low voltage d-c. electrolytic).

*Representatives*  
Calif., Los Angeles—Electrical Specialty Co., 2820 E. 12th St. AN 9-9511  
Calif., Oakland—L. L. Burror Co., 1126 Eighth Ave. TE 4-9533

Calif., San Francisco—Advance Carbon & Electrical Mfg. Co., 2595 Mariposa St. HE 1-4934

Calif., San Francisco—Electrical Specialty Co., 158 11th St. HE 1-9450

Utah, Salt Lake City—J. R. Christensen Agency, 247 E. Fifth St. So. EM 3-4419

**SALSBUURY CORP.**, 1161 E. Florence Ave., Los Angeles 1, Calif.

Automatic clutch, Automatic variable speed transmission.

*Representatives*  
Calif., Alhambra—J. R. Engine & Supply, 1819 W. Valley Blvd.  
Calif., San Francisco—H. G. Makelim Co., 655 Bryant St.

**SARCO CO., INC.**, Empire State Bldg., New York 1, N. Y.

Controls (compressed air, automatic temperature), Regulators (pressure), Traps (self-powered type and electric indicating type, steam), Strainers (pipe line).

*Branch Office*  
Calif., San Francisco—1485 Bayshore Blvd JU 6-1917

*Representatives*  
Ariz., Phoenix—A. C. Baechlin, P.O. Box 912. WH 5-0903

Calif., Los Angeles—T. H. Crears Corp., 5706 Airdrome St. WE 6-1141

Colo., Denver—Equipment Specialties Co., 171 Vallejo St. SH 4-2737

Ida., Boise—Mechanical Equipment & Engineering, Inc., 205 So. Ninth St. Phone 2-4393

Mont., Billings—Leder Engineering Sales, 108 No. 23rd St. P.O. Box 1142. Phone 2-2106

N. Mex., Albuquerque—Technical Service Co., 739 Haines Ave., N.W., P.O. Box 181. Phone 7-1508

Ore., Portland—R. H. Brown & Co., 5825 N.W. Front Ave. CA 7-1155

Utah, Salt Lake City—Williams, Gritton & Wilde, 204 Dooley Bldg. EM 4-6421

Wash., Seattle—E. H. Norton, 909 Lloyd Bldg. MU 0483

Wash., Spokane—John L. Harvey Co., So. 121 Monroe St. MA 4-3002

**SCHRAMM, INC.**, West Chester, Pa.  
Air compressors (portable, stationary), Pneumafitters.

*Branch Offices*

Calif., Los Angeles—846 E. 6th St. TU 2431

Calif., San Francisco—1315 Howard St. UN 3-6655

Colo., Westminster—3983 W. 84th Ave., Shaw Heights. HA 9-2191

Ore., Portland—6915 S.W. 68th Ave. CH 4-8463

*Representatives*

Colo., Denver—Johnson-Tudor Co., 6193 Colorado Blvd. AT 8-1513

Ida., Boise—Engineering Sales Service, Inc., 410 Capitol Blvd. Phone 3-2535

Mont., Helena—Montana Powder & Equipment Co., 12 E. Lawrence. HI 2-2990

Ore., Portland—Contractors Equipment Co., 2727 S.E. Union Ave. BE 5-4131

Wash., Spokane—General Machinery Co., E. 3500 Riverside Ave. KE 1585

**SCHROEDER BROS. CORP.**, Nichol Ave., P. O. Box 72, McKees Rock, Pa.

Portable hydraulic circuit tester, Filter buggy (hydraulic), Line filter (hydraulic).

*Representative*

Utah, Salt Lake City—Rains Co., 212 Beason Bldg. EM 4-2688

**SHAVER BEARING DIV., CHAIN BELT CO.**, 801 Burlington Ave., Downers Grove, Ill.

Cartridge units, Duplex units, Flange units, Pillow blocks, Take-up units, Take-up and frame units.

*Branch Offices*

Calif., Berkeley—2940 Seventh St. TH 3-6801

Calif., Los Angeles—7601 Telegraph Rd. RA 3-4761

Ore., Portland—2310 N.W. 24th Ave. CA 3-6121

Wash., Seattle—2425 Airport Way. MA 7051

*Distributors*

Ariz., Phoenix—Edward D. Maltby Co., 120 So. Fourth Ave., P. O. Box 1124

Ariz., Tucson—Tucson Bearing Co., 527 No. Stone Ave.

Calif., Bakersfield—Hopper Machine Works, 301 26th St.

Calif., Bakersfield—R & F Bearing Co., Inc., 2728 Chester Ave.

Calif., Cloverdale—Klamath Machinery & Locomotive Works

Calif., El Centro—R & F Bearing Co., Inc.

Calif., El Centro—Winn Supply Co., 354 E. Main St.

Calif., Eureka—Bearings & Transmission Products, 5th & B Sts.

Calif., Fresno—Valley Foundry & Machine Co., 2710 So. East Ave.

Calif., Long Beach—Bay City Bearing Co., 709 W. 16th St.

Calif., Long Beach—Edward D. Maltby Co., 2041 W. Anaheim St.

Calif., Los Angeles—Bearing Sales Co., 1950 So. Olive St.

Calif., Los Angeles—Garrett Supply Co., 3844 So. Santa Fe Ave.

Calif., Los Angeles—R & F Bearing Co., Inc., 325 W. 17th St.

Calif., Maywood—Bay City Bearing Co., Inc., 5275 Atlantic

Calif., Maywood—Edward D. Maltby Co., Inc., 4035 E. 52nd St.

Calif., Oakland—Bay City Iron Works, Fourth and Washington

Calif., Oakland—Bearing Engineering Co., 1019 Harrison St.

Calif., Pomona—Reliable Bearing & Supply Co., 246 So. Towne Ave.

Calif., Redding—Cascade Industrial Supply, Inc., Highway 99 South

Calif., San Bernardino—Reliable Bearing & Supply Co., 263 So. E St.

Calif., San Diego—Edward D. Maltby Co., Inc., 745 15th St.

Calif., San Diego—R & F Bearing Co., Inc., 256 Seventh Ave.

Calif., San Diego—Winn Supply Co., 256 Seventh Ave.

Calif., San Francisco—All Bearing Service, Inc., 456 Brannan St.

Calif., San Francisco—Bearing Engineering Co., 1547 Mission St.

Calif., San Francisco—Chas. A. Fowler Co., 979 Bryant St.

Calif., San Francisco—C. M. Lovsted & Co., 591 Howard St.

Calif., San Jose—Bearing & Equipment Co., 60 So. San Pedro St.

Calif., Santa Maria—The Bearing House, P. O. Box 932, Pescu Rd.

Calif., Stockton—The Bearing Supply Co., 300 N. Wilson Way

Calif., Stockton—Guntert & Zimmerman Sales Div., Inc., P. O. Box 1688

Calif., Taft—Hooper Machine Works

Calif., Ukiah—Klamath Machinery & Locomotive Works, 720 No. State St.

## RUNDEL-SIMPLATROL

Calif., Ventura—The Bearing House, 1252 No. Ventura Ave.

Colo., Cripple Creek—Union Supply Co.

Colo., Denver—Bearing Service & Supply Co., 1850 Market St.

Colo., Denver—Colorado Bearing Co., 1601-11 Wazee St.

Colo., Denver—Union Bearing & Transmission Co., 1622 Wazee St.

Colo., Denver—Union Supply Co., 5460 Colorado Blvd.

Ida., Boise—Idaho Chain & Sprockets, Inc., 2400 Warm Springs Ave., P.O. Box 2648

Ida., Boise—Western Bearings, Inc., 520 Front St.

Ida., Idaho Falls—Bearing Service & Supply Co., Air-Port Rd.

Ida., Lewiston—Jameson Machine & Supply Co., 855 D St.

Ida., Pocatello—Pocatello Chain & Sprocket, Inc., 701 So. First Ave.

Mont., Billings—Bearings Supply Co., 15 No. 31st St., P. O. Box 1391

Mont., Missoula—Power Transmission, Inc., 812 Toole Ave.

N. Mex., Albuquerque—R. L. Harrison Co., Inc., 1801 4th St. N.W., P. O. Box 1320

N. Mex., Albuquerque—Montezuma Bearing Co., 1413 First St. N.W., P. O. Box 593

N. Mex., Carlsbad—Carlsbad Supply Co., P. O. Box 1042

N. Mex., Farmington—C & K Industrial Supply, 635 E. Main St.

N. Mex., Roswell—Clowe & Cowan

Ore., Coos Bay—A. B. Daly Co., 824 No. Front St.

Ore., Eugene—Bearing Sales & Service, 225 Seventh Ave. W.

Ore., Eugene—Harmer Mill & Logging Supply Co., 209 Polk St.

Ore., Eugene—Oregon Supply Co., 250 W. Fourth St.

Ore., Eugene—Woodbury & Co., 265 W. Eighth St.

Ore., Grants Pass—Cascade Industrial Supply Co., 410 Redwood Hwy.

Ore., Klamath Falls—Cascade Industrial Supply Co., Box 330, 515 Market St.

Ore., Medford—Woodbury Medford Co., P. O. Box 323, 703 So. Grape

Ore., North Bend—Oregon Pacific Co., No. Bend City Dock, P. O. Box 9

Ore., Portland—Bearing Sales & Service, 1645 N.W. Hoyt St.

Ore., Portland—General Tool Co., 325 N.W. 15th Ave.

Ore., Portland—Woodbury & Co., 133 S.W. 2nd Ave.

Ore., Roseburg—Bearing Sales & Service, 117 So. Stephens St.

Ore., Roseburg—Industrial Supply Co., 132 So. Stephens St.

Ore., Salem—Salem Steel & Supply Co., 180 Court St.

Utah, Helper—Carbon Transfer & Supply Co., P. O. Box 180

Utah, Salt Lake City—Bearings Engineering & Sales Co., 756 So. Second St. W.

Utah, Salt Lake City—Bearing Service & Supply, 1207 So. Main St.

Wash., Aberdeen—Bearing Sales & Service, 317 E. Market St.

Wash., Aberdeen—Whitcher Machinery Co., 411 E. State St.

Wash., Everett—Bearing Sales & Service, Inc., 2803 Grand Ave.

Wash., Longview—Bearing Sales & Service

Wash., Seattle—All Bearing Service, Inc., 2741 Fourth Ave. So.

Wash., Seattle—Bearing Sales & Service, Inc., 2906 Sixth Ave. So.

Wash., Seattle—C. M. Lovsted & Co., Inc., 4000 W. Marginal Way

Wash., Seattle—Washington Machinery Co., 7329 E. Marginal Way

Wash., Spokane—Bitco, Inc., E. 2928 Trent Ave.

Wash., Spokane—General Machinery Co., E. 3500 Block, Riverside Ave.

Wash., Tacoma—All Bearing Service Co., 2324 E. 11th St.

Wash., Tacoma—Bearing Sales & Service, Inc., 1718 Pacific Ave.

Wash., Tacoma—W. S. Walter Co., 1722 Pacific Ave.

Wash., Yakima—Dodge-Yakima Supply Co., 109 So. Front St.

## SIMPLATROL PRODUCTS CORP., 24

Salisbury St., Worcester 5, Mass.

Electrical (magnetic) clutches and brakes.

*Representatives*

Calif., Los Angeles—W. H. Del Mar & Co., 3925 W. Slauson Ave. AX 3-5301

Calif., San Francisco—Power-Mac Corp., 467 So. Van Ness Ave. UN 1-1430

Colo., Denver—Hubert Kaub & Co., 1025 Santa Fe Dr. MA 3-4606

Utah, Salt Lake City—Electrical Sales Co., P. O. Box 49, Sugar House Station. HU 5-0531

Wash., Seattle—C. H. Parsons & Co., 3028 First Ave. MU 3933

## SIMPLEX—THOMSON

**SIMPLEX WIRE & CABLE CO.,** 79 Sidney St., Cambridge 39, Mass.  
Wire and cable (electric).

*Branch Offices*  
Ariz., Phoenix—1942 W. Weldon Ave. CR 4-5483  
Calif., Los Angeles—319 E. Washington Blvd. RI 9-3351  
Calif., San Francisco—390 Fourth St. DO 2-4220  
Ore., Portland—1238 N.W. Glisan St. CA 8-8478  
Wash., Seattle—1928 First Ave. So. EL 0123

**SKINNER ELECTRIC VALVE DIV.,** 95 Edgewood Ave., New Britain, Conn.  
Stainless steel solenoid valves (for air, water, oil, steam, vacuum and many other media).

*Representatives*  
Calif., San Francisco—Western Control Equipment Co., 3573 Pierce St. WE 1-2155  
Calif., Van Nuys—Western Control Equipment Co., 14615 Ventura Blvd. ST 9-2300  
Colo., Denver—Automatic Control & Equipment Co., 1925 Blake St. AC 2-9525  
Ore., Portland—Hydraulic & Air Equipment Co., 2316 N.W. Savier. CA 2-3295

*Distributors*  
Ariz., Phoenix—Air-Draulics Co., 3135 N. 29th Ave. AL 8-6441  
Calif., Glendale—Haskel Engineering & Supply, 1236 So. Central. CH 5-3167  
Calif., Oakland—Rucker Co., 4700 San Pablo. OL 3-5221  
Calif., San Francisco—California Instrument Co., 851 10th Ave. UN 2-0550  
Ore., Portland—Power Transmission Products, 1107 N.W. 14th St. CA 7-1271

**SMITH, A. O., CORP., Electric Motor Div.,** 531 No. Fourth St., Tipp City, Ohio

Geomotors, Motors (electric, poly-phase and single-phase AC).

*Branch Offices*  
Calif., Los Angeles—5715 Smithway St. RA 3-3361  
Calif., Oakland—505 66th Ave. LO 9-8994  
*Representatives*  
Ore., Grants Pass—R. J. Jones, 1725 Williams Secondary  
Ore., Portland—A. L. Polich, Inc., 734 N.W. Glisan St. CA 8-2671  
Wash., Seattle—H. M. Denny Co., 111 W. Harrison. EL 5960

**SNAP-TITE, INC.,** 201 Titusville Road, Union City, Pa.

Hydraulic couplings and fittings for aircraft missiles, Quick connect and disconnect couplings, Special couplings, Valves.

*Representatives*  
Ariz., Phoenix—B. Fred Larson, 6108 No. 11th Ave. CR 4-7006  
Calif., Los Angeles—Vickery Co., 3312 W. Vernon Ave. AX 1-3100  
Calif., Oakland—The Vickery Co., 610 16th St. GL 1-1160  
Colo., Denver—Alta Engineering Co., 1988 Nome St. EM 6-3557  
Hawaii, Honolulu—Arthur H. deRocher Co., Ltd., P.O. Box 617  
Utah, Salt Lake City—C. H. Spencer & Co., 210 W. 33rd St. So. IN 8-6683  
Wash., Seattle—Jack Ogle & Co., 105 Orcas St. MO 2030

**SOAPSTONE DUCT CO.,** 3985 Beach St., Oakland 8, Calif.

Oct-O-Duct, electrical conduit for underground power and electric systems.

*Representative*  
Calif., San Francisco—Maydwell & Hartzell, Inc., 870 Tennessee St. AT 8-6900

**SORGEI ELECTRIC CO.,** 838 W. National Ave., Milwaukee 6, Wis.

Electrical transformers, Unit substations, Load centers.

*Representatives*  
Calif., Los Angeles—H. D. Easterbrook, 1264 So. Boyle Ave. AN 9-9421  
Colo., Denver—Floyd H. Boyer, P. O. Box 1751, AL 5-8770  
Ore., Portland—Fred W. Carlson & Associates, 935 N.W. 12th Ave., Rm. 135. CA 8-3798  
Wash., Seattle—Fred W. Carlson, 1201 Dexter Ave. EL 6630

**SPERRY PRODUCTS, INC.,** Shelter Rock Rd., Danbury, Conn.

Instruments (measuring and testing).

*Branch Office*  
Calif., Los Angeles—5258 E. Washington Blvd. AN 3-7722

**SPLIT BALLBEARING CORP., DIV. OF MPB, INC.,** Mechanic St., Lebanon, N. H.

Bearings (ball).

*Branch*  
Calif., Los Angeles—6214 W. Manchester Ave. OR 8-0027

*Representatives*  
Calif., Los Angeles—Edward D. Maltby Co., 1937 So. Flower St. RI 7-9191  
Calif., San Francisco—George M. Philpott Co., 1960 Bryant St. HE 1-5475  
Wash., Seattle—Bearing Engr. & Supply Co., 2548 Airport Way. MA 2744

**SQUARE D CO.,** 4335 Valley Blvd., Los Angeles 32, Calif.

Circuit breakers, Control centers, Controls (compressed air, electric, electric motor, hydraulic), Ducts (bus and wiring), Load centers, Panelboards (electric), Switches (automatic, electric), Switchgear equipment.

*Branch Offices*  
Calif., Sacramento—1331 T St. GI 2-8332  
Calif., San Bernardino—7495 Buena Vista. YU 2-2687  
Calif., San Diego—Rm. 604, California Theatre Bldg. BE 3-7621  
Calif., San Francisco—211 Industrial St. JU 7-4590  
Colo., Denver—710 W. Colfax. KE 4-6234  
Ore., Portland—711 S.E. Ankeny St. BE 4-8488  
Utah, Salt Lake City—455 E. Fourth St. DA 2-5859  
Wash., Seattle—830 Corwin Place. CA 1474  
Wash., Spokane—W. 915 Mallon. BR 1444

*Representatives*  
Ariz., Phoenix—Sun Valley Elec. Mfg. Co., 106 E. Buchanan. AL 8-6448  
Calif., Fresno—Electric Equipment Co., 561 Divisadero. Phone 3-5614  
Hawaii, Honolulu—A. E. Linzer, 1079 Noia. Phone 7-6317

**SQUARE D CO., EC&M DIV.,** 4500 Lee Road, Cleveland 28, Ohio

Controls (electric, electric motor).

*Branch Offices*  
Calif., Los Angeles—4335 Valley Blvd. CA 1-0611  
Calif., San Francisco—211 Industrial St. JU 7-6126  
Wash., Seattle—830 Corwin Pl. CA 1474  
*Representatives*  
Colo., Denver—H. C. Guire Co., 715 So. York St. SP 7-2864  
Utah, Salt Lake City—Ritter Engineering Co., Kearns Bldg. EM 3-7933

**STANDARD PRESSED STEEL CO., P.O.** Box 333, Jenkintown, Pa.

Collars (shaft), Pillow blocks.

*Branch Office*  
Calif., El Segundo—741 Lairport St. EL 1655

**STEPHENS-ADAMSON MFG. CO.,** 85 Ridgeway Ave., Aurora, Ill.

Bearings (ball), Conveying, elevating, screening, crushing and power transmission equipment (coal handling and bulk materials handling equipment), Pillow blocks, Reducers, speed (helical gear).

See advertisements on pages 28, 83

*Branch Offices*  
Ariz., Phoenix—1625 E. Camelback, Suite 2B AM 6-5990  
Calif., Los Angeles—2227 E. 37th St. LU 3-1511  
Calif., San Francisco—145 Mission St. EX 2-4218  
Utah, Salt Lake City—1302 Deseret Bldg. EL 5-3883  
Wash., Seattle—709 Joseph Vance Bldg. MU 3962

*Representatives*  
Colo., Denver—E. N. Murray, 320 Denver Club Bldg. AL 5-0533  
Utah, Salt Lake City—S. F. Estes, 1302 Deseret Bldg.  
Wash., Seattle—D. D. Didrickson, 709 Joseph Vance Bldg.

**STERLING ELECTRIC MOTORS, INC.,** 5401 Telegraph Rd., Los Angeles 22, Calif. RA 3-6211

Electric motors, Geared motors, Speed reducers, Variable speed transmissions.

*Branch Offices*  
Calif., San Francisco—353 Brannan St. SU 1-7997  
Ore., Portland—738 Glisan St. CA 4-6566  
Wash., Seattle—1712 First Ave. So. SE 0723  
*Representatives*  
Colo., Denver—James R. Hughes, 5460 Colorado Blvd. AL 5-2091  
Utah, Salt Lake City—W. H. Pingree, 461 E. 2nd South St. EM 3-6732

**STRONG, CARLISLE & HAMMOND DIV.,** 1392 W. Third St., Cleveland 13, Ohio

Steam traps (inverted bucket, open bucket, float, float and thermostatic, pumping or lifting, vacuum, thermostatic), Strainers, Separators, Pressure regulators, Block steel valves, Engine stops.

*Representatives*  
Ariz., Phoenix—Western Supply Co., 837 E. Madison St.  
Calif., Emeryville—Warren & Bailey Co., 1287 66th St.  
Calif., Los Angeles—Warren & Bailey Co., 3528 So. Garfield Ave.  
Colo., Denver—Grimes Pipe & Supply Co., 1300 Larimer St.  
Hawaii, Honolulu—Lynch Co., 814 Kapiolani Blvd.  
Mont., Butte—Mueller Engineering Co., 909 E. Second St.  
N. Mex., Albuquerque—Hale Sanitary Supply Co., 1024 No. Fourth St.  
Ore., Portland—Harris Supply Corp., 524 N.W. 14th Ave.  
Ore., Portland—Woodbury & Co., P. O. Box 3858, Swan Island  
Utah, Salt Lake City—Mechanical Equipment Co., 328 11th Ave.  
Wash., Seattle—W. G. Ballantyne Co., 1016 First Ave. So.  
Wash., Seattle—Northwest Plumbing Supply Co., 509 Boren Ave.  
Wash., Tacoma—American Plumbing & Steam Supply Co., 1908 Pacific Ave.

**TALLER & COOPER, INC.,** 75 Front St., Brooklyn, N. Y.

Control and data reduction equipment.

*Representatives*  
Calif., Los Angeles—F. Somers Peterson, 1501 Maple Ave. RI 9-6151  
Calif., San Francisco—F. Somers Peterson, 157 13th St. MA 1-2255

**TEER, WICKWIRE & CO.,** see LINDBERG AIR & HYDRAULIC DIV.

**THERMOID CO.,** Trenton, N. J.

Belting, drive (rubber), Belts, V (rubber), Clutches (faces), Hoses (air, hydraulic).

*Branch Offices*  
Calif., Los Angeles—1100 So. Santa Fe Ave. TR 8603  
Calif., San Francisco—544 Second St. YU 2-4141  
Ore., Portland—3939 N.W. St. Helen's Rd. CA 9753  
Utah, Nephi—Phone 424W

**THOMAS FLEXIBLE COUPLING CO.,** Main Ave. and Biddle St., Warren, Pa.

Couplings (flexible, for mechanical power transmission).

*Representatives*  
Calif., Los Angeles—W. A. Hoppe & Co., 3640 W. 62nd St. AX 3-6072  
Calif., San Francisco—Brooks Equipment Co., 636 Potrero Ave. VA 4-3223  
Colo., Denver—Stearns-Roger Manufacturing Co., 640 Bannock St. AC 2-9484  
Wash., Seattle—Seattle Equipment & Supply, Inc., 4020 Airport Way. MA 3569

**THOMSON INDUSTRIES, INC.,** 1029 Plandome Rd., Manhasset, N. Y.

Ball bushings (ball bearings for linear motion), Nyloned bearings (precision nylon bearings), 60-case hardened and ground shafts, rolls, guide rods and other long, round parts.

*Representatives*  
Calif., Los Angeles—Pacific Bearings Co., 1210 So. Hope St. RI 9-6341  
Calif., Oakland—Bearing Engineering Co., 1019 Harrison St. TW 3-2251  
Calif., San Francisco—Bearing Engineering Co., 1547 Mission St. HE 1-1500  
Colo., Denver—Allen Bearings Supply Co., 4970 Jackson St. FL 5-3563  
Hawaii, Honolulu—Bearing & Equipment Co., Ltd., 1081 Waimanu St.  
N. Mex., Albuquerque—Montezuma Bearing Service, 1413 First St. N.W.  
Ore., Eugene—Bearing Sales & Service, Phone 5-0325  
Ore., Portland—Bearing Sales & Service, 1645 N.W. Hoyt St. CA 4-6301  
Ore., Roseburg—Bearing Sales & Service  
Wash., Aberdeen—Bearing Sales & Service, 317 E. Market St.  
Wash., Everett—Bearings Sales & Service, 2803 Grand Ave.  
Wash., Longview—Bearing Sales & Service  
Wash., Seattle—Bearing Sales & Service, 2908 Sixth Ave. So. MU 0331  
Wash., Tacoma—Bearing Sales & Service, 1743 Jefferson Ave. MA 0104

## THOR POWER TOOL CO., Prudential Plaza, Chicago 1, Ill.

Belting, drive (rubber), Hoses (air), Motors (air, electric), Tools (portable air, electric).

### Branch Offices

Calif., Los Angeles—6200 E. Slauson Ave. RA 3-3191  
Calif., San Francisco—315 So. Van Ness Ave. UN 1-2045  
Colo., Denver—2704 W. 8th Ave. AL 5-3668  
Wash., Seattle—611 E. Pike St. CA 5000

## TIMKEN ROLLER BEARING CO., THE, 1835 Dueber Ave. S.W., Canton 6, Ohio

Tapered roller bearings.

### Branch Offices

Calif., Los Angeles—2727 So. Flower St. RI 7-4141  
Calif., San Francisco—465 Sixth St. EX 2-4041  
Colo., Denver—2140 E. 45th Ave. AM 60275  
Wash., Seattle—305 Ninth Ave. No. MA 1680

## TITEFLEX, INC., Hendee St., Springfield 4, Mass.

Hoses (flexible metallic).

### Branch Office

Calif., Los Angeles—1824 So. Hope St. RI 7-9244

### Representatives

Calif., Glendale—Haskel Engineering & Supply Co., 1236 So. Central Ave. CH 5-6811  
Calif., Los Angeles—J. F. Dixon Co., 1835 So. Hope St. RI 9-4161  
Calif., San Francisco—Adam Hill Co., 244 9th St. MA 1-4137  
Wash., Seattle—A. F. Woolsey Co., 84 Madison St. EL 7061

## TON-TEX CORP., 247 Pearl St., N. W. Grand Rapids 2, Mich.

Belting (power transmission), V-Belt segments (flat and adjustable).

### Branch Office

Calif., San Jose—759 W. San Carlos. CY 3-8280

## TORRINGTON CO., 59 Field St., Torrington, Conn.

All types of ball and roller bearings.

### Branch Offices

Calif., Los Angeles—4433 Crenshaw Blvd. AX 3-6139  
Wash., Seattle—1731 First Ave. EL 2252

### Representatives

Ariz., Phoenix—Edward D. Maltby Co., 424 W. Jefferson St.  
Calif., Anaheim—Edward D. Maltby Co., 1520 W. Lincoln Ave.  
Calif., Colton—Valley Industrial Supply, 401 So. Eighth St.  
Calif., Fresno—General Bearings Co., 2820 Church Ave.  
Calif., Fresno—George M. Philpott Co., 2376 Railroad St.  
Calif., Long Beach—Bay City Bearing Co., Inc., 709 W. 16th St.  
Calif., Long Beach—Edward D. Maltby Co., 2041 W. Anaheim Blvd.  
Calif., Los Angeles—Bearing Sales Co., 1950 So. Olive St.  
Calif., Los Angeles—Edward D. Maltby Co., 1940 So. Figueroa St.  
Calif., Maywood—Bay City Bearing Co., Inc., 5275 Atlantic Blvd.  
Calif., Maywood—Edward D. Maltby Co., 4036 E. 52nd St.  
Calif., Modesto—Geiger Iron Works, Inc., 124 Willow  
Calif., Modesto—Girardi Bearing Co., 717 I St.  
Calif., Oakland—Bearing Industries, Inc., 181 Tenth St.  
Calif., Oakland—George M. Philpott Co., 2928 Poplar St.  
Calif., Ontario—Valley Industrial Supply, 1170 W. Holt Blvd.  
Calif., Sacramento—Bearing House, 318 16th St.  
Calif., Sacramento—George M. Philpott Co., 6260 Folsom Blvd.  
Calif., Salinas—Girardi Bearing Co., 257 John St.  
Calif., San Diego—Edward D. Maltby Co., 745 15th St.  
Calif., San Francisco—All Bearing Service, Inc., 456 Brannan St.  
Calif., San Francisco—Bearing Industries, Inc., 246 Bay Shore Blvd.  
Calif., San Francisco—Charles A. Fowler Co., 979 Bryant St.  
Calif., San Francisco—George M. Philpott Co., 1060 Bryant St.  
Calif., Stockton—Geiger Iron Works, Inc., 3000 Scotts Ave. and Pilgrim St.  
Calif., Stockton—Jones Bearings Co., 443 So. Wilson Way  
Colo., Denver—Bearings Service & Supply Co. of Colorado, 4433 Claude St.

Colo., Denver—Colorado Bearing Co., 1618 Wazee St.

Ida., Idaho Falls—Bearings Service & Supply Co. of Idaho, Airport Rd.  
Ida., Lewiston—Jameson Machine Supply, 829 D St.

Mont., Billings—Power Transmission Equipment, 20 No. 33rd St.  
Nev., Reno—Styris-Sutton Co., 622 So. Virginia St.

N. Mex., Albuquerque—Montezuma Bearing Service, 1413 No. First St.  
N. Mex., Hobbs—Vance Supply Co., 211 So. Grimes

Ore., Coos Bay—Bearing Supply Co., 894 So. Broadway  
Ore., Eugene—Bearings Sales & Service, Inc., 225 Seventh Ave. W.

Ore., Eugene—Bearing Supply Co., 234 W. Sixth Ave.  
Ore., Portland—Bearings Sales & Service, Inc., 1645 N.W. Hoyt St.

Ore., Portland—General Bearing Co., 325 N.W. 15th St.  
Ore., Portland—George M. Philpott Co., 2353 N.W. 21st Ave.

Ore., Roseburg—Bearings Sales & Service, Inc., 729 S.E. Stephens  
Ore., Roseburg—Bearing Supply Co., 531 So. Stephens

Utah, Ogden—Bearing Engineering of Ogden, 1670 Washington Blvd.  
Utah, Salt Lake City—Bearing Engineering & Sales Co., 756 So. Second W.

Utah, Salt Lake City—Bearings Service & Supply Co. of Utah, 1207 So. Main St.  
Utah, Salt Lake City—Utah Bearing Co., 626 S.W. Temple

Wash., Aberdeen—Bearing Sales & Service, Inc., 317 E. Market St.  
Wash., Everett—All Bearing Service, Inc., 2925 Russer Ave.

Wash., Everett—Bearing Sales & Service, Inc., 2803 Grand Ave.  
Wash., Longview—Bearing Engineering & Supply Co., 1005 15th Ave.

Wash., Longview—Bearing Sales & Service, Inc., 743 Commerce St.  
Wash., Seattle—All Bearing Service, Inc., 7241 Fourth Ave. So.

Wash., Seattle—Bearing Engineering & Supply Co., 2548 Airport Way  
Wash., Seattle—Bearing Sales & Service, Inc., 2908 Sixth Ave. So.

Wash., Spokane—A. G. Mohr Co., E. 102 Sprague St.  
Wash., Tacoma—All Bearing Service, Inc., 2324 E. 11th St.

Wash., Tacoma—Bearing Sales & Service, Inc., 1743 Jefferson Ave.  
Wash., Yakima—Central Chain & Transmission Co., Yakima Bearing Div., 709 So. First St.

## TRIANGLE CONDUIT & CABLE CO., INC., P.O. Box 711, New Brunswick, N. J.

Copper tube, Plastic pipe, Wire and cable (electric).

### Branch Offices

Calif., Los Angeles—6466 Fleet St. RA 3-3687  
Calif., San Francisco—2415 17th St. UN 3-6260  
Colo., Denver—142 Broadway. SP 7-2375  
Wash., Seattle—1201 Fourth Ave. So. MU 3971

## TULSA WINCH DIV., VICKERS, INC., 815 E. First St., Tulsa 20, Okla.

Power take-offs, Winches, Speed reducers, Transmissions, Power dividers, Two-speed hanger bearings.

### Distributors

Ariz., Phoenix—Auto Safety House, 238 W. Jefferson. Phone 4-5545  
Ariz., Phoenix—Welch Mfg. Co., 533 W. Jefferson. AL 8-0276  
Calif., Los Angeles—Standard Auto-Body Co., Inc., 4900 So. Soto St. LY 3-1471  
Calif., Lynwood—Rankin Bros., 11090 So. Alameda. NE 6-1929  
Calif., Perkins—Clarks Welding Works, Folsom Blvd. at Perkins. HI 5-2714  
Calif., San Francisco—Modern Vehicle Co., 2044 Bryant St. AT 2-7414  
Colo., Denver—Winter-Weiss Co., 2201 Blake St. MA 3-6233  
Ida., Boise—Lang Co., 420 No. Curtis Rd. Phone 8311-W  
Mont., Billings—Great Northern Tool & Supply Co., 2224 Minnesota Ave. Phone 2-2175  
Mont., Great Falls—Smith Equipment Co., 820 Ninth St. No. Phone 2-1713  
Mont., Kalispell—Industrial Supply Div., Forest Products Co., 175 N.E. Railroad St. Phone 5900  
N. Mex., Albuquerque—M & F Equipment Co., 824 Arno N.E. Phone 3-3793  
N. Mex., Farmington—Farmington Truck & Equipment Co., Inc., P. O. Box 1267. DA 5-2693  
N. Mex., Hobbs—Watson Truck & Supply, P. O. Box 1238. EX 3-3161

## THOR-U.S. ELECTRICAL

Ore., Eugene—Western Equipment Co., 1360 W. First St. EU 4-4265

Ore., Portland—Western Equipment Co., 2244 N.W. Sawyer St. AT 4128  
Utah, Salt Lake City—Lang Co., Inc., First So. and Second W. DA 8-8341

Wash., Seattle—Transport Trailer & Equipment Co., Inc., 3400 Sixth Ave., So. MU 2226  
Wash., Spokane—Andrews Equipment Service of Washington, Inc., E. 4620 Trent Ave. KE 5-1604

Wyo., Casper—Emrick & Hill Engine & Equipment Co., 1701 E. Yellowstone. Phone 2-5341

## TURLOCK IRON & MACHINE WORKS, P.O. Box 609, Turlock, Calif.

Cylinders (air, hydraulic).

### Representatives

Calif., Stockton—Grether & Grether, P.O. Box 47. HO 2-4124  
Calif., Whittier—Grether & Grether, P.O. Box 1036 OW 7-7812

## TUTHILL PUMP CO., 939 E. 95th St., Chicago 19, Ill.

Positive displacement internal-gear rotary pumps.

### Representatives

(Sold in all major cities in the West.)

## TWIN DISC CLUTCH CO., 1234 Racine St., Racine, Wis.

Clutches, Fluid couplings, Friction and fluid drives for industrial applications, Gears (reverse and reduction), Power take-offs, Torque converters.

### Branch Office

Calif., Los Angeles—2950 Leonia Blvd. LO 8-3309

### Representatives

Calif., Bakersfield—California Truck & Industrial Equipment Co., 2810 Brundage Lane  
Calif., Huntington Park—N. A. D'Arcy Co., 7535 Marbrisa St., P.O. Box 447  
Calif., Los Angeles—Charles W. Carter Co., 2221 E. Washington Blvd.  
Calif., Sacramento—California Equipment Co., 2231 Fourth St.  
Calif., San Francisco—California Equipment Co., 660 Bryant St.  
Calif., San Francisco—Charles A. Fowler Co., 979 Bryant St.  
Colo., Denver—Industrial Equipment Co., 4999 Jackson St.  
Ore., Eugene—Mill-Log Equipment Co., 1355 Railroad Blvd.  
Ore., Portland—Hydra-Lines, Inc., 511 S.E. Market St.  
Ore., Portland—Power Transmission Products, 1107 N.W. 14th Ave.

## UNION CHAIN & MFG. CO., Edgewater Ave., Sandusky, Ohio

Belting, Chains (roller, silent transmission, engineering, drive and conveying), Couplings (chain type), Sprockets.

### Branch Office

Ore., Portland—208 S.W. Stark St. CA 8-9211

### Representatives

Calif., Los Angeles—American Chain & Gear, 2451 E. 57th. LU 1-7215  
Calif., San Francisco—Charles A. Fowler Co., 899 Bryant St. UN 3-5010  
Calif., Stockton—Stockton Iron Works, Harrison and Lindsay Sts. HO 6-7091  
Colo., Denver—Power Transmission, Inc., 4965 Jackson St. DU 8-1681  
Mont., Great Falls—Brack Motor Supply Co., 104-106 First Ave. Phone 4-4346  
Mont., Missoula—Power Transmission, Inc., 302 Toole Ave. Phone 9-4188  
N. Mex., Carlsbad—Union Industrial Corp., 112 E. Mermod. TU 5-2187  
Ore., Eugene—Munnell & Sherrill, Inc., 1450 W. 7th St. Phone 4-3237  
Ore., Portland—Munnell & Sherrill, Inc., 400 S.W. First Ave. CA 8-7365  
Utah, Salt Lake City—Kimball Equipment Co., 222 W. 17th. So. Phone 84-6109  
Utah, Salt Lake City—Lundin & May Foundry, 454 W. 5th St. No. Phone 9-2005  
Wash., Longview—Longview Equipment Co.  
Wash., Seattle—Bearing Engineering & Supply, 2548 Airport Way. MA 2744

## U. S. ELECTRICAL MOTORS, INC., 200 E. Slauson Ave., Los Angeles 54, Calif.

Electric motors, Gear motors, Variable speed motors.

### Branch Offices

Ariz., Phoenix—1002 W. Weldon Ave. AL 8-2693  
Calif., Bakersfield—1817 H St. FA 3-7369



## UNITED STATES GAUGE — WESTERN GEAR

Calif., Fresno—155 Van Ness Ave. Phone 5-6659  
 Calif., Sacramento—1425 R St. GI 1-2517  
 Calif., San Francisco—564 Fourth St. GA 1-7626  
 Calif., San Jose—442 Park Ave. CY 3-8580  
 Utah, Salt Lake City—Rm. 212, Beason Bldg., EM 4-6219  
 Wash., Seattle—3427 4th Ave., So. SE 0614

### UNITED STATES GAUGE DIV., AMERICAN MACHINE & METALS, INC., Sellersville, Pa.

Instruments (measuring and testing).

Branch Office  
 Calif., Los Angeles—11978 San Vicente Blvd. GR 2-9554

Representatives  
 Calif., Berkeley—J. S. Page Co., 570 Coventry Rd. LA 4-5517  
 Calif., Los Angeles—W. R. Ladewig Co., 5608 E. Washington Blvd. RA 3-6371  
 Colo., Denver—E. P. Cook Co., 1863 Wazee St. KE 4-2371  
 Wash., Seattle—Instrument Laboratory, 934 Elliott Ave. W. AL 5850

### UNITED STATES RUBBER CO., 1230 Avenue of the Americas, New York 20, N. Y.

Batteries, "Timing" belts, Belts, V (rubber), Fittings and Couplings (air, hydraulic), Hose (air, hydraulic), Pulleys, Wire and cable (electric).

Branch Office  
 Calif., Los Angeles—Soto & E. 46th St. Calif., San Francisco—6025 Third St. Colo., Denver—4800 Colorado Blvd. Ore., Portland—630 N.W. Tenth Ave. Utah, Salt Lake City—1967 So. Second St.

### VALVAIR CORP., 454 Morgan Ave., Akron 11, Ohio

Air, hydraulic and vacuum control valves.

Branch Office  
 Calif., Oakland—3871 Piedmont. OL 5-1533  
 Representatives  
 Calif., South Pasadena—Teglen Engineering Co., 1942 Huntington Dr. PY 1-2356  
 Colo., Denver—E. C. Wild Co., 659 So. Garfield St. SP 7-2852  
 Ore., Portland—Power Transmission, 1107 N.W. 14th Ave. CA 7-1271  
 Wash., Seattle—Chain Gear, 820-824 First Ave. MA 7000

### V-BELT CLUTCH CO., 418 No. Western Ave., Los Angeles 4, Calif. HO 5-5082

Ball-Lok V-belt clutches, two-speed and reverse drive clutches for use on gas engines, electric motors, high speed intermittent clutching and industrial drives to 5 hp.

Distributors  
 Calif., San Francisco—Bearing Engineering Co., 1547 Mission St.  
 Colo., Denver—Western Belting Co., 1720 Wazee St.  
 Wash., Seattle—Chain Gear, Inc., 820-824 First Ave. So.

### VERSA PRODUCTS CO., INC., 249 Scholes St., Brooklyn 6, N. Y.

Versa valves.

Representatives  
 Calif., Pasadena—E. D. Sweetland Co., 940 No. Fair Oaks Ave. RY 1-8157  
 Calif., San Francisco—E. D. Sweetland Co., 151 Mission St. GA 1-2663  
 Ore., Portland—Russ Chamberlin Co., 234 S.E. 12th Ave. EA 7124  
 Wash., Seattle—George W. Warden Co., Inc., 1305 Dexter Ave. AL 0622

### VICKERS, INC., Administrative & Engineering Center, Detroit 32, Mich.

Complete hydraulic power systems, hydraulic pumps, transmissions, valves, motors, cylinders, power units, steering boosters.

Branch Office  
 Calif., Berkeley—920 Grayson St. AS 8-4997  
 Calif., El Segundo—2160 E. Imperial Hwy. OR 8-2503  
 Wash., Seattle—623 Eighth Ave. So. MU 6950

### VICTOR BALATA & TEXTILE BELTING CO., 53 Park Place, New York 7, N. Y.

Belting, drive (Balata, canvas stitched, Hycar, Neoprene, solid woven), Lacing (belt).

Representatives  
 Calif., Orinda—Hugh Reed, 45 Loma Vista Dr.  
 Calif., South Pasadena—T. H. Hinchcliffe, P. O. Box 221  
 Ore., Portland—S. Alex Turnley, 4433 N.E. Failing St.

### W-S FITTINGS DIV., H. K. PORTER CO., INC., P.O. Box 95, Roselle, N. J.

Forged steel fittings (carbon, stainless, alloy).

Branch Office  
 Calif., Fullerton—519 Lovell Pl. LA 6-2072  
 Wash., Seattle—101 Jones Bldg. MA 0600

Representatives  
 Sold through leading distributors everywhere.

### WADSWORTH ELECTRIC MFG., CO., THE, Covington, Ky.

Circuit breakers, Controls (electric), Load centers, Panelboards (electric), Service equipment, Switches (electric, safety), Wiring troughs.

Branch Office  
 Calif., Los Angeles—836 Traction Ave. MI 1925

Representatives  
 Calif., San Francisco—Hodges & Glomb, Inc., 921 Bryant St. UN 1-2367  
 Colo., Denver—L. S. Reed & Co., 1018 Lawrence St. CH 2416  
 Ore., Portland—Bruce-Emmett Co., 830 S.E. Alder St. EA 8117  
 Wash., Seattle—Bruce-Emmett Co., 1016 First Ave. So. EL 5007

### WAGNER ELECTRIC CORP., 6400 Plymouth Ave., St. Louis 14, Mo.

Motors, Transformers.

Branch Office  
 Calif., El Segundo—610 Lalport. OR 8-7671  
 Calif., So. San Francisco—219 Shaw Rd. PL 6-0520  
 Colo., Denver—1526 Blake St. CH 4-7421  
 Ore., Portland—3460 N.W. Industrial St. CA 7-3654  
 Utah, Salt Lake City—165 So. 1st W. EM 3-5013

### WALWORTH CO., 60 E. 42nd St., New York 17, N. Y.

Valves, Fittings.

Branch Office  
 Calif., Los Angeles—2655 So. Eastland Ave.  
 Calif., San Francisco—155 Montgomery St.  
 Wash., Seattle—1077 Cherry St.

### WARD LEONARD ELECTRIC CO., 115 MacQuesten Parkway So., Mount Vernon, N. Y.

Controls (electric, electric motor).

Branch Office  
 Calif., Los Angeles—1605 E. Olympic Blvd. MA 9-3595

Representatives  
 Ariz., Tucson—Central Station Equipment Co., 2323 Aviation Highway. Phone 3-2493  
 Calif., San Francisco—L. F. Church Co., 750 Natoma St. UN 1-2840  
 Colo., Denver—Mark G. Mueller, 1644 Blake St. AC 2-3515  
 Ore., Portland—Northwestern Agencies, Inc., 2941 N.W. Quimby. BR 5004  
 Utah, Salt Lake City—Leonard M. Slusser, 318 Dooley Bldg. Phone 5-2322  
 Wash., Seattle—Northwestern Agencies, Inc., 4130 First Ave. So. EL 8882

Distributors  
 Ariz., Phoenix—Arizona Wholesale Electric Co., 200 So. First  
 Ariz., Tucson—Hussar Electric Supply Co., 108 No. Park Ave.  
 Calif., San Francisco—Nadon Engineering & Sales Co., 7 Front St.  
 Calif., San Francisco—Rundel Electric Co., 634 Sixth St.  
 Colo., Denver—M. L. Foss, Inc., 19th & Arapahoe Sts.  
 Ida., Pocatello—Steel Industrial Supply, Paul Roberts Div., P.O. Box 1151  
 Wash., Seattle—Fremont Electric Co., 744 No. 34th St.

### WARNER ELECTRIC BRAKE & CLUTCH CO., INDUSTRIAL DIV., 449 Gardner St., Beloit, Wis.

Brakes (electric), Clutches, Rated torques from 2 lb. in. to 700 lb. ft.

Branch Office  
 Calif., Pasadena—R. Whitson, 116 So. Euclid Ave., Suite 101. SY 2-6713

Representatives  
 Calif., Pasadena—Theodore C. Alford, Suite 101, 116 So. Euclid Ave. SY 5-7261  
 Calif., Pleasant Hill—Stanley B. Hone, 185 Hazel Dr. CL 4-3947  
 Ore., Portland—Joseph F. Taraba Co., P. O. Box 5232. BE 4-6491. -2

Utah, Salt Lake City—Clarence W. Silver Co., 550 W. 7th St. So. Phone 5-5378  
 Wash., Seattle—Joseph F. Taraba Co., 1016 First Ave. So. EL 5006

Distributors  
 Ariz., Phoenix—Semon Bearing & Supply Co., Inc., 325 No. Third Ave. Phone 8-7566  
 Calif., El Monte—Leden, Inc., Gilman Rd. at Garvey Rd.  
 Calif., Los Angeles—Minder Chain & Gear Co., 6011 So. Central. AD 3-7221  
 Colo., Denver—Power Transmission Equipment, Inc., 4965 Jackson St. DU 8-1681

### WEATHERHEAD CO., THE, FORT WAYNE DIV., 128 W. Washington Blvd., Fort Wayne, Ind.

Automotive and industrial fittings, Hydraulic hose and fittings, Hermo flares couplings, Reusable hose ends, Clamp type hose ends, Swaged hose assemblies, Drain and shut-off cocks, Dash controls.

Branch Office  
 Calif., Glendale—1736 Standard Ave. CH 5-1891  
 Calif., Ukiah—239 Burlington Dr.  
 Calif., Woodland Hills—21237 Lopez St. DI 7-2681  
 Wash., Seattle—11060 Second Ave. N.E. WA 1195

Representatives  
 Calif., Huntington Park—Mahl Steel & Supply Co., 3081 E. Slauson Ave.  
 Calif., Los Angeles—Republie Supply Co., 2600 So. Eastland Ave.  
 Calif., Pasadena—Jay H. Collin Co., 2403 E. Washington St.  
 Calif., San Francisco—Adam-Hill Co., 244 Ninth St.  
 Ore., Portland—Goodyear Rubber & Asbestos Co., 205 N.W. 5th Ave.  
 Ore., Portland—Hydraulic & Air Equipment Co., 2316 N.W. 5th Ave.  
 Wash., Seattle—Tubesupply Co., 2453 6th Ave. South

### WEBSTER ELECTRIC CO., 1900 Clark St., Racine, Wis.

Hydraulic pumps, motors and valves.

Representatives  
 Calif., Glendale—Haskel Engineering & Sy. Co., 1236 So. Central  
 Calif., San Francisco—Haskel Engineering & Sy. Co., 225 11th St.  
 Ore., Portland—Hydraulic & Air Equipment Co., 2316 N.W. 5th Ave.  
 Wash., Seattle—Hydraulic & Air Equipment Co., 2450 Sixth Ave. So.  
 Wash., Seattle—Paul B. Maurice, 551 E. 56th St.

### WEBSTER MANUFACTURING, INC., 1200 W. Davis St., Tiffin, Ohio

Chains (malleable, steel), Collars (shaft), Conveyors for bulk materials, Couplings (shaft), Pillow blocks, Shafts, Sprockets.

Representatives  
 Calif., Los Angeles—Manufacturers Engineering Co., 1720 W. 9th St.  
 Calif., San Francisco—Frank J. Madison Co., 607 Market St. SU 1-1747  
 Ore., Portland—Power Transmission Products, 1107 N.W. 14th Ave.  
 Wash., Seattle—Washington Belting & Rubber Co., 2768 1st Ave. So.

### WELLMAN ENGINEERING CO., see ANKER-HOLTH DIV.

### WELTRONIC CO., 19500 W. Eight Mile Rd., Detroit 19, Mich.

Weldtronic fusion welder control, Co-Mo-Trol d-c motor drive, Digitronic precision controls, Resistance welding controls, Electronic devices.

Branch Office  
 Calif., Inglewood—9431 11th Ave., OR 8-1542  
 Calif., Torrance—18010 Atkinson Ave.

### WESTERN GEAR CORP., 2600 E. Imperial Highway, P.O. Box 182, Lynwood, Calif. NE 6-2161

Electrical equipment, Gearmotors, Gears (special machinery of all types and sizes), High speed units, Increasers (speed), Motors (air, electric, hydraulic, variable speed), Reducers, speed (bevel gear, helical gear, planetary gear, shaft mounted, spur gear, worm gear), Transformers (rotary), Transmission, variable speed.

See advertisement on page 6

Branch Office  
 Calif., Belmont—Quarry and Industrial Rd. LY 3-7611

## WESTERN INSULATED - ZIDELL

Calif., Pasadena—132 W. Colorado Blvd. RY 1-6604  
 Calif., San Francisco—1035 Folsom St. HE 1-6521  
 Colo., Denver—865 Lincoln St. KE 4-5513  
 Ore., Portland—930 S.E. Oak St. BE 5-3177  
 15th St.  
 Wash., Seattle—417 9th Ave. So. MA 0052

**WESTERN INSULATED WIRE CO.,**  
 2425 E. 30th, Los Angeles 58, Calif.  
 Portable power cords (Type SO, S, SJ, SJO, brewery, telephone, asbestos), Cable (control, W, G, varnished cambric, asbestos, RR).

**Representatives**  
 Calif., San Francisco—Michael Curry, 220 15th St. LO 4-5730  
 N. Mex., Albuquerque—John Carder, 1624 No. 1st St. Phone 2-3581  
 Wash., Seattle—J. H. Stumph, 1000 4th Ave. So. MU 5232

**WESTINGHOUSE AIR BRAKE CO.,**  
**INDUSTRIAL PRODUCTS DIV., P.O.**  
 Box 36, Wilmerding, Pa.

Controls (compressed air), Cylinders (air, hydraulic), Fittings and couplings (air), Hose (air), Regulators (pressure), Valves (air power line).

**Branch Offices**  
 Calif., Los Angeles—994 Pacific Electric Bldg., 610 So. Main St. MI 9719  
 Calif., San Francisco—501 Matson Bldg., 215 Market St. EX 2-1790

**Representatives**  
 Ariz., Phoenix—Air-Draulics Co., 31 So. Third Ave.  
 Calif., Bakersfield—Lawless Brothers, Inc., 4000 Rosedale Highway, P.O. Box 3036  
 Calif., Eureka—Bearings & Transmission Products, P.O. Box 879, 2930 Broadway  
 Calif., Fresno—Lawless Brothers, Inc., 2537 Church Ave.  
 Calif., Long Beach—Marine Industrial Supply, 645 W. Anaheim St.  
 Calif., Long Beach—Smith & Thorp, Ltd., 141 E. Anaheim St.  
 Calif., Los Angeles—Huddleston Equipment Co., 1148 So. Los Angeles St.  
 Calif., San Diego—Equipment Engineering Co., 1470 India St.  
 Calif., San Francisco—Power-Mac Corp., 467 So. Van Ness Ave.  
 Calif., San Pedro—Bolstad Sales & Service, 124 E. 4th St.  
 Calif., Stockton—Geiger Iron Works, Inc., Scotts Ave. and Pilgrim St.  
 Hawaii, Honolulu—Napa Hawaiian Warehouse, 747 Haniwai St.  
 Ore., Medford—Cal-Ore Machinery Co., Inc., 944 So. Central  
 Ore., Portland—Hallidie Machinery Co., Portland Div., 1546 S.E. Union Ave.  
 Utah, Salt Lake City—Robert Taylor & Sons, 1077 So. Main St., P.O. Box 1223  
 Wash., Seattle—Evans Engine & Equipment Co., 1230 Westlake No.  
 Wash., Seattle—Hallidie Machinery Co., 210 Hudson St.  
 Wash., Spokane—Equipment Sales & Service, 925 First Ave.  
 Wyo., Casper—Gehring Equipment Co., 1701 E. Yellowstone, P.O. Box 2290

**WESTINGHOUSE ELECTRIC CORP.,**  
 P. O. Box 868, Pittsburgh 30, Pa.

Circuit breakers, Control centers, Controls (electric, electric motor), Ducts (bus and wiring), Fluid drives, Generators, Gears (bevel, helical, spur, etc.), Gears (worm), Generators (electric), Instruments (measuring and testing), Load centers, Motors (electric, single-phase and poly-phase AC), Panelboards (electric), Rectifiers, Speed reducers, Substations (unit), Switchgear equipment, Transformers.

**Branch Offices**  
 Ariz., Phoenix—1110 No. 21st Ave., Ariz., Tucson—20-20 Bldg.  
 Calif., Arcadia—129 So. First Ave.  
 Calif., Bakersfield—1210 18th St.  
 Calif., Emeryville—5815 Peladeau St.  
 Calif., Fresno—2608 California Ave.  
 Calif., Long Beach—2129 Pacific Ave.  
 Calif., Los Angeles—600 St. Paul Ave.  
 Calif., Riverside—3830 8th St.  
 Calif., Sacramento—1720 14th St.  
 Calif., San Diego—526 E St.  
 Calif., San Francisco—410 Bush St.  
 Colo., Denver—55 W. Fifth Ave.  
 Ida., Boise—319 So. Capitol Blvd.  
 Mont., Butte—1 E. Broadway  
 N. Mex., Albuquerque—1115 Central Ave., N.E.  
 Ore., Eugene—62 W. 13th Ave.  
 Ore., Medford—1233 Court St.  
 Ore., Portland—309 S.W. Sixth Ave.  
 Texas, El Paso—611 Electric Bldg.  
 Utah, Salt Lake City—235 W.S. Temple St.  
 Wash., Seattle—3451 E. Marginal Way  
 Wash., Spokane—No. 1023 Monroe St.  
 Wash., Tacoma—950 Pacific Ave.

**WESTON ELECTRICAL INSTRUMENT CORP.,** subsidiary of **DAYSTROM, INC.,** 614 Frelinghuysen Ave., Newark 12, N. J.

Controls (electric), Instruments (measuring and testing), Regulators (pressure).

**Branch Office**  
 Calif., Los Angeles—2001 So. Grand Ave.  
**Representatives**  
 Calif., San Francisco—H. E. Held, 147 10th St.  
 Colo., Denver—Peterson Co., 4949 Colorado Blvd.  
 Wash., Seattle—Elcher & Co., 5 W. Harrison

**WHITNEY BLAKE CO.,** 1565 Dixwell Ave., New Haven 14, Conn.

Electric wire and cable.

**Branch Offices**  
 Calif., Los Altos—P. O. Box 1362, WH 8-2122  
 Calif., Los Angeles—12243 Shetland Lane, GR 6-1091  
 Wash., Seattle—4041 90th Ave. S.E., Mercer Island, AD 8378

**Representatives**  
 Ariz., Phoenix—Graybar Electric Co.  
 Ariz., Tucson—Graybar Electric Co.  
 Calif., Fresno—Graybar Electric Co.  
 Calif., Long Beach—Graybar Electric Co.  
 Calif., Los Angeles—Gough Industries, Inc., 815 E. First St.  
 Calif., Los Angeles—Graybar Electric Co., 210 Anderson St.  
 Calif., Oakland—Graybar Electric Co.  
 Calif., Sacramento—Graybar Electric Co.  
 Calif., San Bernardino—Graybar Electric Co.  
 Calif., San Diego—Graybar Electric Co.  
 Calif., San Diego—Pacific Wholesale Electric Co., 702 State St.  
 Calif., San Francisco—Graybar Electric Co.  
 Calif., Santa Ana—Graybar Electric Co.  
 Ida., Boise—Graybar Electric Co.  
 Mont., Butte—Graybar Electric Co.  
 Ore., Eugene—Graybar Electric Co.  
 Ore., Portland—Graybar Electric Co.  
 Ore., Portland—North Coast Electric Co.  
 Utah, Salt Lake City—Graybar Electric Co.  
 Wash., Seattle—Graybar Electric Co.  
 Wash., Seattle—North Coast Electric Co.  
 Wash., Spokane—Graybar Electric Co.  
 Wash., Tacoma—Graybar Electric Co.

**WHITNEY CHAIN CO.,** 237 Hamilton St., Hartford 2, Conn.

Finished steel roller chains, Conveyor chains, Sprockets and flexible couplings for power transmission and conveying, Whitney-Tormag magnetic drives.

**Branch Office**  
 Calif., Huntington Park—5400 Pacific Blvd., LU 7-3151

**Representatives**  
 Calif., Alturas—Moty & Van Dyke, Inc.  
 Calif., Bakersfield—Ba-Valley Industrial Supply, 131 First St.  
 Calif., Blythe—Munson Equipment Co., Inc., 1 1/2 mi. W. Hobson Way, U. S. Hwy. 60-70  
 Calif., Blythe—Shank & Krets Machine & Auto Parts, 141 No. 5th St.  
 Calif., Corcoran—Sawtelle & Rosprim, P. O. Box 983  
 Calif., Culver City—Aircraft & Industrial Bearings, Inc., 8541 Washington Blvd.  
 Calif., Escondido—Escondido Tractor Co., 226 W. Grand  
 Calif., Eureka—Bearings & Transmission Products, Inc., 2930 Broadway  
 Calif., Fresno—General Bearings Co., P. O. Box 3220  
 Calif., Gardena—Brandphant Bearings, Inc., 16508 So. Vermont Ave.  
 Calif., Huntington Park—Mechanical Drives Co., 2610 E. 54th St.  
 Calif., Indio—White's Paint & Hardware, 45-502 Smurr Ave.  
 Calif., Los Angeles—Bearing Sales Co., 1950 So. Olive St.  
 Calif., Los Angeles—M C Supply Co., 1715 E. Florence  
 Calif., Los Angeles—Western Belting & Mechanicals, Inc., 3525 Emery St.  
 Calif., Marysville—Bearing Belt Chain Co., 823 Fifth St.  
 Calif., North Sacramento—Industrial Tractor Sales, 903 Del Paso Blvd.  
 Calif., Oakland—Bearing Engineering Co., 1019 Harrison St.  
 Calif., Patterson—W. C. Filippini Machine Shop, 2nd and I Sts.  
 Calif., Pomona—Kelley Supply Co., 264 No. Main St.  
 Calif., Redding—Moty & Van Dyke, Inc., Highway 99 So.  
 Calif., Riverside—Belt & Equipment Supply Co., 2351 8th St.  
 Calif., San Diego—Tractor Supply Co., 2146 Main St.  
 Calif., San Francisco—Bearing Engineering Co., 1547 Mission St.

Calif., San Gabriel—Valley Cities Supply Co., 845 E. Valley Blvd.  
 Calif., Santa Maria—The Bearing House of Santa Maria, P.O. Box 982  
 Calif., Stockton—The Bearing Supply Co., 300 No. Wilson Way  
 Calif., Van Nuys—So-Cal Equipment & Supply Co., 2227 Van Nuys Blvd.  
 Calif., Ventura—The Bearing House, 1252 No. Ventura Ave.

**WORTHINGTON CORP.,** 401 Worthington Ave., Harrison, N. J.

Air compressors (portable, stationary), Belts, V (rubber), Condensers (barometric, surface steam), Electors (steam-jet air), Engines, Feedwater heaters, Gears (bevel, helical, spur, etc.), Generators (electric), Increase (speed), Pumps, power (horizontal and vertical), Pumps (condensate, boiler feed), Reducers, speed (helical gear), Shafts, Transmission, variable speed.

**Branch Offices**  
 Calif., Los Angeles—5076 Santa Fe Ave. LO 8-6451  
 Calif., San Francisco—224 Townsend St. GA 1-4906  
 Colo., Denver—1640 Blake St. TA 5-7284  
 Utah, Salt Lake City—118 Social Hall Ave. EM 4-6591  
 Wash., Seattle—2916 Western Ave. MA 4218

**Representatives**  
 (District offices and representatives in all principal cities).

**WORTHINGTON CORP.,** see also **MASON-NEILAN DIV.**

**YORK-SHIPLEY, INC.,** 75 Jessop Place, York, Pa.

Boilers and boiler equipment, Fuel burning systems, Burners (power, rotary), Generators (power, steam).

**Branch Offices**  
 Calif., Los Angeles—1226 So. Atlantic. EL 9-4501  
 Calif., San Francisco—721 Bryant St. GA 1-0492

**Representatives**  
 Ariz., Phoenix—Crane Co., 233 So. First Ave. AL 3-5138  
 Calif., Torrance—The A. C. Co., 2093 Torrance Blvd. Phone 238  
 Ore., Portland—Copenhagen & Co., 406 Builders Exchange, FI 6671  
 Wash., Seattle—Jenkins Engineering Co., 2426 Commodore Way. AD 7852  
 Wash., Spokane—Francis J. Fallquist, 180 So. Washington St. MA 5514

**YUBA MANUFACTURING CO.,** 351 California St., San Francisco 4, Calif.

Chains for drives (detachable link, roller), Pulleys, Shafts, Sprockets.

**Branch Offices**  
 Calif., Benicia—701 East H St. Phone 628  
 Calif., San Francisco—351 California. EX 2-0274

**Representatives**  
 Ariz., Phoenix—Allison Steel Mfg. Co., 19th Ave. So. Pacific Tracks  
 Ariz., Phoenix—Arizona Cedar Rapids Co., 1726 W. Jackson St.  
 Calif., Alhambra—Frank Cox Equipment Co., 3000 W. Valley Blvd.  
 Calif., Los Angeles—Brown-Bevis Industrial Equipment Co., 4441 Santa Fe Ave.  
 Calif., Oakland—Bay Cities Equipment Co., 2792 Cypress  
 Calif., Oakland—The Brose Co., 414 Santa Clara  
 Ida., Boise—Idaho Sprocket & Machine Works, 2400 Warm Springs Ave.  
 Ida., Pocatello—Pocatello Chain & Sprocket, P. O. Box 50  
 Mont., Butte—Hall-Perry Equipment, Box 1367  
 Mont., Missoula—Westmont Tractor Co., 1150 E. Spruce St.  
 Nev., Reno—Sierra Machinery Co., 307 Morrill  
 N. Mex., Albuquerque—Lively Equipment Co., 2601 4th St. N.W.  
 Ore., Portland—Neison Equipment Co., 5251 S.E. McLaughlin Blvd.  
 Tex., El Paso—Lively Equipment Co., 1708 E. Bassett St.  
 Utah, Salt Lake City—Kimball Equipment Co., 222 W. 17th South  
 Wash., Seattle—Jack Sahlberg Equipment, 5950 4th Ave. So.

**ZIDELL MACHINERY & SUPPLY CO.,** 3121 S.W. Moody St., Portland 1, Ore. CA 8-8691

Electric drives (DC, variable speed), Electric set works.

**Representatives (Variable speed drives only)**  
 Market, Phone 532  
 Mont., Missoula—Miller Machinery, P.O. Box 1496. Phone 9-2309  
 Ore., Portland—R. Hoe & Co., 2700 S.E. Tacoma. BE 4-9501

## AIR COMPRESSORS - CIRCUIT BREAKERS

# CLASSIFIED PRODUCTS SECTION

If you are searching for a particular type of industrial power product, look here under proper heading to determine names of manufacturers of that item—then refer to listings in "Where-to-Buy Section" to obtain name, address, and telephone number of manufacturer's branch office, distributor, or representative nearest you.

### AIR COMPRESSORS—

#### portable

American Brake Shoe Co.,  
Kellogg Div.  
Atlas Copco Pacific, Inc.  
The Bellows Co. of California  
Binks Manufacturing Co.  
Brown Boveri Corp.  
The Cornelius Co.  
Curtis Manufacturing Co.  
The DeVilbiss Co.  
Gardner-Denver Co.  
Ingersoll-Rand Co.  
Joy Manufacturing Co.  
Leden Manufacturing Co.  
Quincy Compressor Co.  
Roots-Connersville Blower Div.,  
Dresser Industries, Inc.  
Schramm, Inc.  
Worthington Corp.

### AIR COMPRESSORS—

#### stationary

Allis-Chalmers Mfg. Co.  
American Brake Shoe Co.,  
Kellogg Div.  
Atlas Copco Pacific, Inc.  
The Bellows Co. of California  
Binks Manufacturing Co.  
Brunner Manufacturing Co.  
Curtis Manufacturing Co.  
The DeVilbiss Co.  
Fuller Co.  
Gardner-Denver Co.  
Ingersoll-Rand Co.  
Joy Manufacturing Co.  
Leden Manufacturing Co.  
Quincy Compressor Co.  
Schramm, Inc.  
Worthington Corp.

### AIR CYLINDERS

See CYLINDERS, air

### AIR MOTORS

See MOTORS, air

### BASES—motor

Allis-Chalmers Mfg. Co.  
American Brake Shoe Co.  
Footo Bros. Gear & Machine Corp.  
Gerbing Manufacturing Corp.  
Link-Belt Co.  
Lord Mfg. Co.  
The Louis Allis Co.  
Lovejoy Flexible Coupling Co.  
The Master Electric Co.  
Philadelphia Gear Works, Inc.  
Reeves Pulley Co. Div., Reliance  
Electric & Engrg. Co. (adjust-  
able)

### BATTERIES

C & D Batteries, Inc.  
Christie Electric Corp. (chargers)  
Delco-Remy Div., General Motors  
Corp.  
The Electric Storage Battery Co.  
The E. F. Goodrich Co.  
Gould-National Batteries, Inc.  
Hobbs Battery Sales Div., Gould-  
National Batteries, Inc.  
United States Rubber Co.

### BEARINGS—babbitted

Charles Bond Co.  
R. & J. Dick Co., Inc.  
Dodge Manufacturing Corp.  
The Jeffrey Mfg. Co.  
Johnson Bronze Co.  
Link-Belt Co.  
Ohio Carbon Co.

### BEARINGS—ball

Aetna Ball & Roller Bearing Co.  
Ahlberg Bearing Co.

Boston Gear Works  
Dodge Manufacturing Corp.  
The Fafnir Bearing Co.  
Hartford Steel Ball Co., Inc.  
Link-Belt Co.  
Marlin-Rockwell Corp.  
McGill Manufacturing Co.  
Miniature Precision Bearings, Inc.  
New Departure Div.,  
General Motors Corp.  
New Hampshire Ball Bearings, Inc.  
Nice Ball Bearing Co.  
Ohio Carbon Co.  
S K F Industries, Inc.  
Split Ballbearing Corp.  
Stephens-Adamson Mfg. Co.  
Thomson Industries, Inc.  
Torrington Co.

### BEARINGS—roller

Aetna Ball & Roller Bearing Co.  
Chain Belt Co.  
Cooper Split Roller Bearing Corp.  
Dodge Manufacturing Corp.  
Link-Belt Co.  
Marlin-Rockwell Corp.  
McGill Manufacturing Co.  
Ohio Carbon Co.  
Rollway Bearing Co., Inc.  
S K F Industries, Inc.  
Shafer Bearing Div.,  
Chain Belt Co.  
The Timken Roller Bearing Co.  
The Torrington Co.  
(also thrust)

### BEARINGS—sleeve

Ampeco Metal, Inc.  
Amplex Div., Chrysler Corp.  
(also flange and thrust)  
Bunting Bros and Bronze Co.  
Congress Drives Div.  
Dodge Manufacturing Corp.  
Electro-Nite Carbon Co.  
Johnson Bronze Co.  
Kingwell Bros., Ltd.  
Link-Belt Co.  
Morganite, Inc.  
Ohio Carbon Co.  
Randall Graphite Bearings, Inc.

### BELTING, DRIVE—chain

#### or link

H. N. Cook Belting Co.  
R. & J. Dick Co., Inc.  
Fort Worth Steel & Machinery Co.  
Graton & Knight Co.  
Link-Belt Co.  
Manheim Mfg. & Belting Co. (link  
only)  
Union Chain & Mfg. Co.

### BELTING, DRIVE—

#### composition

California Belting & Leather Co.  
H. N. Cook Belting Co.  
R. & J. Dick Co., Inc.  
Extremotus, Inc.  
The Gates Rubber Co.  
Hewitt-Robins, Inc.  
Raybestos-Manhattan, Inc.  
Russell Mfg. Co.  
Ton-Tex Corp.  
Victor Balata & Textile Belting Co.

### BELTING, DRIVE—leather

Charles Bond Co.  
California Belting & Leather Co.  
Chicago Belting Div., Chicago-Allis  
Mfg. Corp.  
H. N. Cook Belting Co.  
L. P. Degen Belting Co.  
The Gates Rubber Co.  
Graton & Knight Co.  
E. F. Houghton & Co.  
J. E. Rhoads & Sons  
Russell Mfg. Co.  
Ton-Tex Corp.

### BELTING, DRIVE—rubber

American Pulley Co.  
The American Rubber Mfg. Co.  
California Belting & Leather Co.  
Congress Drives Div.  
The Dayton Rubber Co. (V-type)  
Dodge Manufacturing Corp.  
Durkee-Atwood Co.  
The Gates Rubber Co.  
Goodall Rubber Co.  
Goodyear Tire & Rubber Co.  
Hewitt-Robins, Inc.  
Link-Belt Co.  
New York Belting & Packing Co.  
Raybestos-Manhattan, Inc.  
Russell Manufacturing Co.  
Thermoid Co.  
Thor Power Tool Co.  
Ton-Tex Corp.

### BELT LACING

See LACING, belt

### BELTS—timing

R. & J. Dick Co., Inc.  
Link-Belt Co.  
New York Belting & Packing Co.  
J. E. Rhoads & Sons  
Russell Mfg. Co.  
United States Rubber Co.

### BELTS, V—composition

Durkee-Atwood Co.  
The Gates Rubber Co.  
Raybestos-Manhattan, Inc.  
Ton-Tex Corp.

### BELTS, V—leather

California Belting & Leather Co.  
H. N. Cook Belting Co.  
Fort Worth Steel & Machinery Co.  
The Gates Rubber Co.  
Graton & Knight Co.  
J. E. Rhoads & Sons  
Ton-Tex Corp.

### BELTS, V—rubber

Allis-Chalmers Mfg. Co.  
American Pulley Co.  
California Belting & Leather Co.  
Congress Drives Div.  
The Dayton Rubber Co.  
R. & J. Dick Co., Inc.  
Dodge Manufacturing Corp.  
Durkee-Atwood Co.  
Fort Worth Steel & Machinery Co.  
The Gates Rubber Co.  
Goodall Rubber Co.  
The B. F. Goodrich Co.  
Goodyear Tire & Rubber Co.  
Link-Belt Co.  
Manheim Mfg. & Belting Co.  
New York Belting & Packing Co.  
Raybestos-Manhattan, Inc.  
Thermoid Co.  
United States Rubber Co.  
Worthington Corp.

### BOILERS & BOILER

#### EQUIPMENT

The Babcock & Wilcox Co.  
Boiler Engineering &  
Supply Co., Inc.  
Clayton Manufacturing Co.  
Cleaver-Brooks Co.  
Combustion Engineering, Inc.  
Copes-Vulcan Div., Blaw-Knox Co.  
(equipment only)  
National-U.S. Radiator Corp.  
Detroit Stoker Co.  
Foster Wheeler Corp.  
Fulton Siphon Div.  
Robertshaw-Fulton Controls Co.  
(equipment only)

Johnson Corp.  
E. Keeler Co.  
Lunkenheimer Co.  
Madden Corp.  
McDonnell & Miller, Inc.  
National-U.S. Radiator Corp.  
Orr & Sembower, Inc.  
Sid E. Parker Boiler Mfg. Co., Inc.  
Pastushin Industries, Inc.  
Republic Steel Corp.,  
Steel & Tubes Div. (tubes)  
Riley Stoker Corp.  
York-ShIPLEY, Inc.

### BRAKES—electric

Dynamatic Div.,  
Eaton Manufacturing Co.  
Raybestos Div.  
Raybestos-Manhattan, Inc.  
Simplotrol Products Corp.  
Warner Electric Brake & Clutch Co.

### BUS DUCTS

See DUCTS

### CABLE

See WIRE & CABLE

### CHAINS FOR DRIVES—

#### detachable link

Acme Chain Corp.  
Chain Belt Co.  
Diamond Chain Co., Inc.  
The Jeffrey Mfg. Co.  
Link-Belt Co.  
Moline Malleable Iron Co.  
Philadelphia Gear Works, Inc.  
Yuba Manufacturing Co.

### CHAINS FOR DRIVES—

#### roller

Acme Chain Corp.  
Atlas Chain & Mfg. Co.  
Charles Bond Co.  
Boston Gear Works  
Chain Belt Co.  
Cullman Wheel Co.  
Diamond Chain Co., Inc.  
R. & J. Dick Co., Inc.  
Dodge Manufacturing Corp.  
Fort Worth Steel & Machinery Co.  
The Jeffrey Mfg. Co.  
Link-Belt Co.  
Morse Chain Co.  
Philadelphia Gear Works, Inc.  
Union Chain & Mfg. Co.  
Whitney Chain Co.  
Yuba Manufacturing Co.

### CHAINS FOR DRIVES—

#### silent transmission

Acme Chain Corp.  
Chain Belt Co.  
Link-Belt Co.  
Morse Chain Co.  
Philadelphia Gear Works, Inc.  
Ramsey Chain Co., Inc.  
Union Chain & Mfg. Co.  
Whitney Chain Co.

### CHAINS FOR DRIVES—

#### other

Acme Chain Corp.  
Chain Belt Co.  
Link-Belt Co. (steel, cast)  
Webster Manufacturing, Inc.  
(malleable and steel)  
Whitney Chain Co.

### CIRCUIT BREAKERS

Allis-Chalmers Mfg. Co.  
Appleton Electric Co.  
Brown Boveri Corp.  
Bull Dog Electric Products Co.  
Cutler-Hammer, Inc.  
Federal Pacific Electric Co.  
General Electric Co.,  
Apparatus Sales Div.  
General Electric Co.,  
Circuit Protective Devices Dept.  
I-T-E Circuit Breaker Co.  
Square D Co.  
The Wadsworth Electric Mfg. Co.,  
Inc.  
Westinghouse Electric Corp.



## CLUTCHES

American Flexible Coupling Div.,  
Zurn Industries, Inc.  
Cutler-Hammer, Inc.  
Dodge Manufacturing Corp.  
Eaton Manufacturing Co.,  
Dynamatic Div.  
Flaton Machine Works, Inc.  
Formsprag Co.  
The Hilliard Corp.  
I-T-E Circuit Breaker Co.  
The Jeffrey Mfg. Co.  
Leden Manufacturing Co.  
Link-Belt Co.  
Mercury Clutch Div.,  
Automatic Steel Products, Inc.  
Morse Chain Co.  
Raybestos Div.,  
Raybestos-Manhattan, Inc.  
(facings)  
Revo, Inc.  
Salisbury Corp.  
Simpalrol Products Corp.  
Thermoid Co. (facings)  
Twin Disc Clutch Co.  
V-Belt Clutch Co.  
Warner Electric Brake & Clutch Co.

## COLLARS—shaft

American Pulley Co.  
Boston Gear Works  
Chain Belt Co.  
Congress Drives Div.  
R. & J. Dick Co., Inc.  
Dodge Manufacturing Corp.  
Gear Engineering & Mfg. Co., Inc.  
Link-Belt Co.  
Randall Graphite Bearings, Inc.  
Standard Pressed Steel Co.  
Webster Manufacturing, Inc.

## COMPRESSORS

See AIR COMPRESSORS

## CONDUITS & FITTINGS—

electric

General Electric Co., Construction  
Materials Div. (conduits only)  
Johns-Manville Corp.  
National Electric Products Corp.  
Republic Steel Corp., Steel & Tubes  
Div.  
Triangle Conduit & Cable Co., Inc.  
(steel, plastic)

## CONTROL CENTERS

Allen-Bradley Co.  
Allis-Chalmers Mfg. Co.  
Barber-Colman Co.  
The Clark Controller Co.  
Cutler-Hammer, Inc.  
Delta Switchboard Co.  
Federal Pacific Electric Co.  
Fischer & Porter Co.  
General Electric Co.  
Apparatus Sales Div.  
Industrial Control Panel Co.  
Leeds & Northrup Co.  
The Rucker Co.  
Rundel Electric Co.  
Square D Co.  
Taller & Cooper, Inc.  
Westinghouse Electric Corp.

## CONTROLS—compressed

air

Bailey Meter Co.  
Barksdale Valves  
Brown Instrument Div.,  
Minneapolis-Honeywell Co.  
Clary Corp.  
Cleveland Fuel Equipment Co.  
The Emerson Manufacturing Co.  
Fielden Instrument Div.  
Robertshaw-Fulton Controls Co.  
Fischer & Porter Co.  
The Foxboro Co.  
Fulton Syphon Div.,  
Robertshaw-Fulton Controls Co.  
Furnas Electric Co.  
Grover Smith Manufacturing Corp.  
Hagan Chemicals & Controls, Inc.  
Hanna Engineering Works  
Jordan Corp.  
Leden Manufacturing Co.  
Mason-Neilan Div.,  
Worthington Corp.  
M-B Products, Inc.

Mercoid Corp.  
Modernair Corp.  
Numatics, Inc.  
Perfecting Service Co.  
The Powers Regulator Co.  
Renco-Toledo, Inc.  
Ross Operating Valve Co.  
Rucker Co.  
Sarco Co., Inc.  
Square D Co.  
Westinghouse Air Brake Co.,  
Industrial Products Div.  
Versa Products Co., Inc.

## CONTROLS—electric

Allen-Bradley Co.  
Allis-Chalmers Mfg. Co.  
Automatic Switch Co.  
Barber-Colman Co.  
Brown Instrument Div.,  
Minneapolis-Honeywell Co.  
The Clark Controller Co.  
Clary Corp.  
Cleveland Fuel Equipment Co.  
Crouse-Hinds Co. (housings)  
Cutler-Hammer, Inc.  
Fielden Instrument Div.  
Robertshaw-Fulton Controls Co.  
Fischer & Porter Co.  
The Foxboro Co.  
Furnas Electric Co.  
General Control Co., Inc.  
General Electric Co.,  
Apparatus Sales Div.  
Guardian Electric Mfg. Co.  
Hagan Chemicals & Controls, Inc.  
Johnson Corp.  
Leeds & Northrup Co.  
The Mercoid Corp.  
The Powers Regulator Co.  
Republic Electric & Development Co.  
Rundel Electric Co.  
Square D Co.  
Square D Co., E. C. & M Div.  
Taller & Cooper, Inc.  
The Wadsworth Electric  
Mfg. Co., Inc.  
Ward Leonard Electric Co.  
Weltronic Co.  
Westinghouse Electric Corp.  
Weston Electrical Instrument Corp.,  
subsidiary of Daystrom, Inc.

## CONTROLS—electric motor

Allen-Bradley Co.  
Allis-Chalmers Mfg. Co.  
The Clark Controller Co.  
Clary Corp.  
Crouse-Hinds (housings)  
Cutler-Hammer, Inc.  
Federal Pacific Electric Co.  
Fischer & Porter Co.  
Furnas Electric Co.  
General Control Co., Inc.  
General Electric Co.,  
Apparatus Sales Div.  
Guardian Electric Mfg. Co.  
Hagan Chemicals & Controls, Inc.  
The Louis Allis Co.  
Philadelphia Gear Works, Inc.  
The Powers Regulator Co.  
Reliance Electric & Engineering Co.  
Republic Electric & Development Co.  
Safe-T-Mike Corp. (capacitors)  
Square D Co.  
Square D Co., E. C. & M Div.  
Taller & Cooper, Inc.  
Ward Leonard Electric Co.  
Weltronic Co.  
Westinghouse Electric Corp.

## CONTROLS—hydraulic

Barksdale Valves  
Be-Ge Manufacturing Co.  
Char-Lynn Co.  
Clary Corp.  
The Commercial Shearing &  
Stamping Co.  
The Denison Engineering Co.  
Fischer & Porter Co.  
Fulton Syphon Div.  
Robertshaw-Fulton Controls Co.  
Grover Smith Manufacturing Corp.  
Hagan Chemicals & Controls, Inc.  
Hanna Engineering Works  
Hydraulic Power Div.,  
Hydraulic Press Mfg. Co.,  
a Div. of Koehring Co.  
Jordan Corp.  
Leden Manufacturing Co.  
Leslie Co.  
Modernair Corp.  
The New York Air Brake Co.,  
Kalamazoo Div.  
The Oilgear Co.  
The Powers Regulator Co.

Racine Hydraulics & Machinery, Inc.  
Renco-Toledo, Inc.  
Rucker Co.  
Simplex Engineering Co.  
Square D Co.  
Taller & Cooper, Inc.  
Versa Products Co., Inc.  
Vickers, Inc.  
Webster Electric Co.

## COUPLINGS—air and hydraulic

See FITTINGS & COUPLINGS

## COUPLINGS—shaft

Ajax Flexible Coupling Co., Inc.  
American Flexible Coupling Div.,  
Zurn Industries, Inc.  
Atlas Chain & Mfg. Co.  
Charles Bond Co.  
Boston Gear Works  
David Brown, Inc.  
Certified Flexible Couplings, Inc.  
Chain Belt Co.  
Char-Lynn Co.  
Congress Drives Div.  
Cullman Wheel Co.  
Diamond Chain Co., Inc.  
R. & J. Dick Co., Inc.  
Dodge Manufacturing Corp.  
The Emerson Manufacturing Co.  
The Falk Corp.  
Flaton Machine Works, Inc.  
Foots Bros. Gear & Machine Corp.  
Fort Worth Steel & Machinery Co.  
Gerbing Manufacturing Corp.  
Graton & Knight Co. (flexible)  
Hewitt-Robins, Inc.  
The Jeffrey Mfg. Co.  
Koppers Co., Inc.  
Leden Manufacturing Co.  
Link-Belt Co.  
Lord Manufacturing Co.  
Lovejoy Flexible Coupling Co.  
(flexible and shaft)  
Morse Chain Co.  
Philadelphia Gear Works, Inc.  
Ramsey Chain Co., Inc.  
Thomas Flexible Coupling Co.  
Webster Manufacturing, Inc.  
Whitney Chain Co. (flexible)

## CYLINDERS—air

Airmatic Valve, Inc.  
Alkon Products Corp.  
Anker-Holth Div.,  
Wellman Engineering Co.  
The Bellows Co. of California  
Bimba Hardware &  
Manufacturing Co.  
The Bruning Co.  
Carter Controls, Inc.  
Cascade Manufacturing Co.  
Curtis Manufacturing Co.  
Denmore Engineering Co., Inc.  
The Foxboro Co.  
Galland-Henning, Nopak Div.  
Grover Smith Mfg. Corp.  
Hanna Engineering Works  
Hannifin Corp.  
Hydraulic Power Div.,  
Hydraulic Press Mfg. Co.,  
a Div. of Koehring Co.  
Leden Manufacturing Co.  
Lindberg Air & Hydraulic Div.,  
Teer, Wickwire & Co.  
Miller Fluid Power Div.,  
Flick-Reedy Corp.  
Modernair Corp.  
C. A. Norgren Co.  
Ortman-Miller Machine Co., Inc.  
Remco Mfg. Co.  
Renco-Toledo, Inc.  
Rivett Lathe & Grinder, Inc.  
Rucker Co.  
S-P Manufacturing Corp.  
Turlock Iron & Machine Works  
Westinghouse Air Brake Co.,  
Industrial Products Div.

## CYLINDERS—hydraulic

Airmatic Valve, Inc.  
Alkon Products Corp.  
Anker-Holth Div.,  
Wellman Engineering Co.  
Be-Ge Manufacturing Co.  
The Bellows Co. of California  
The Bruning Co.  
Carter Controls, Inc.  
Cascade Manufacturing Co.  
Char-Lynn Co.

The Commercial Shearing &  
Stamping Co.  
The Denison Engineering Co.  
Denmore Engineering Co., Inc.  
Dukes Co., Inc.  
Galland-Henning, Nopak Div.  
Grover Smith Manufacturing Corp.  
Hanna Engineering Works  
Hannifin Corp.  
Hydraulic Power Div.,  
Hydraulic Press Mfg. Co.,  
a Div. of Koehring Co.  
Lassman, Benjamin & Son  
Lindberg Air & Hydraulic Div.,  
Teer, Wickwire & Co.  
Leden Manufacturing Co.  
Miller Fluid Power Div.,  
Flick-Reedy Corp.  
Modernair Corp.  
The New York Air Brake Co.,  
Kalamazoo Div.  
The Oilgear Co.  
Ortman-Miller Machine Co.  
Remco Manufacturing Co.  
Rivett Lathe & Grinder, Inc.  
Rucker Co.  
S-P Manufacturing Corp.  
Turlock Iron & Machine Works  
Vickers, Inc.  
Westinghouse Air Brake Co.,  
Industrial Products Div.

## DRIVES, VARIABLE SPEED

See TRANSMISSION, VARIABLE  
SPEED, & MOTORS, variable speed

## DUCTS—bus and wiring

American Metal Hose Div.,  
American Brass Co.  
Bull Dog Electric Products Co.  
Federal Pacific Electric Co.  
Feedrail Corp.  
Hoffman Engineering Corp.  
I-T-E Circuit Breaker Co.  
National Electric Products Corp.  
Panduit Co.  
Square D Co.  
The Wadsworth Electric Mfg. Co.,  
Inc. (wiring troughs)  
Westinghouse Electric Corp.

## ELECTRIC MOTORS

See MOTORS, electric

## ENGINES

Allis-Chalmers Mfg. Co.  
Atlas Copco Pacific, Inc.  
Detroit Diesel Engine Div.,  
General Motors Corp.  
The Emerson Manufacturing Co.  
Enterprise Engine & Machinery Co.  
Fairbanks, Morse & Co. (gas, diesel)  
D. W. Onan & Sons, Inc.  
Ingersoll-Rand Co. (diesel & gas)  
Worthington Corp.

## FITTINGS & COUPLINGS—

air

Aero-Coupling Corp.  
Aerogrip Corp.  
The Aero Equipment Corp.  
Atlas Copco Pacific, Inc.  
The Bruning Co.  
Char-Lynn Co.  
Chikan Co.  
Clary Corp.  
Continental Sales & Service Co.  
Denmore Engineering Co., Inc.  
Eastman Pacific Co.  
The Gates Rubber Co.  
Goodall Rubber Co.  
Grover Smith Mfg. Co.  
Imperial Brass Mfg. Co.  
L & L Manufacturing Co.  
Le-Hi Div., Hose Accessories Co.  
Lide Co.  
Lincoln Engineering Co.  
of California  
M-B Products, Inc.  
C. A. Norgren Co. (air line filters)  
Parker Appliance Co.  
Perfecting Service Co.  
Punch-Lok Co. (hose clamps)  
Renco-Toledo, Inc.  
Rucker Co.  
Snap-Tite, Inc.  
U. S. Hoffman Machinery Corp.  
United States Rubber Co.  
Walworth Co.  
Westinghouse Air Brake Co.,  
Industrial Products Div.

# FITTINGS-MOTORS, POLY-PHASE

## FITTINGS & COUPLINGS—

### hydraulic

Aero-Coupling Corp.  
Aeroquip Corp.  
The Bruning Co.  
Char-Lynn Co.  
Chiksan Co.  
Clary Corp.  
Densmore Engineering Co., Inc.  
Dukes Co., Inc.  
Eastman Pacific Co.  
The Gates Rubber Co.  
Goodall Rubber Co.  
Grover Smith Mfg. Corp.  
The Imperial Brass Mfg. Co.  
L & L Manufacturing Co.  
Ladish Co.  
Le-Hi Div., Hose Accessories Co.  
Lens Co.  
Lincoln Engineering Co.  
of California  
Midwest Piping Co., Inc.  
Minnesota Rubber & Gasket Co.  
(seals)  
Parker Appliance Co.  
Perfecting Service Co.  
Precision Rubber Products Corp.  
(seals)  
Punch-Lok Co. (hose clamps)  
Rucker Co.  
Schroeder Bros. Corp. (filters)  
Snap-Tite, Inc.  
United States Rubber Co.  
Walworth Co.  
W-S Fittings Div.,  
H. K. Parker Co., Inc.  
The Weatherhead Co.,  
Fort Wayne Div.

## FLAT BELTS

See BELTING, DRIVE

## FLEXIBLE SHAFTING

Elliott Mfg. Co.

## FLUID DRIVES

Dodge Manufacturing Corp.  
Link-Belt Co.  
National Seal Div.  
The Oilgear Co.  
Twin Disc Clutch Co.  
Vickers Inc.  
Westinghouse Electric Corp.

## FUSES

Bussmann Manufacturing Co.  
Economy Fuse & Mfg. Co.  
General Electric Co., Apparatus  
Sales Div.  
Monarch Electric Corp.

## GEARMOTORS

Allis-Chalmers Mfg. Co.  
Boston Gear Works  
David Brown, Inc.  
Century Electric Co.  
Fairbanks, Morse & Co.  
The Falk Corp.  
Foote Bros. Gear & Machine Corp.  
Franklin Electric Co., Inc.  
General Electric Co., Apparatus  
Sales Div.  
Janette Electric Mfg. Co.  
Link-Belt Co.  
The Louis Allis Co.  
The Master Electric Co.  
Philadelphia Gear Works, Inc.  
Reliance Electric & Engineering Co.  
Reuland Electric Co.  
A. O. Smith Corp., Electric Motor  
Div.  
Sterling Electric Motors, Inc.  
Western Gear Corp.  
Westinghouse Electric Corp.

## GEARS—bevel, helical, spur, etc.

Advance Gear & Machine Corp.  
Ampco Metal, Inc.  
American Stock Gear Div.,  
Perfecting Gear Co.  
Amplex Div., Chrysler Corp.  
Charles Bond Co.  
Boston Gear Works  
David Brown, Inc.  
Chicago Rawhide Manufacturing Co.  
Cullman Wheel Co., (spur only)  
The Falk Corp. (helical only)

Foote Bros. Gear & Machine Corp.  
Gear Engineering & Mfg. Co., Inc.  
Hewitt-Robins, Inc.  
Johnson Gear & Mfg. Co., Ltd.  
(and gear drives)  
Link-Belt Co. (and gear units)  
Lufkin Foundry & Machine Co.  
(also herringbone)  
J. W. Minder Chain & Gear Co.  
Pie Design Corp.  
(precision instrument)  
Philadelphia Gear Works, Inc.  
Tulsa Winch Div., Vickers, Inc.  
Twin Disc Clutch Co.  
Western Gear Corp.  
Westinghouse Corp.  
Worthington Corp.

## GEARS—worm

Advance Gear & Machine Corp.  
American Stock Gear Div.,  
Perfecting Gear Co.  
Ampco Metal, Inc.  
Charles Bond Co.  
Boston Gear Works  
David Brown, Inc.  
Chicago Rawhide Mfg. Co.  
The Cleveland Worm & Gear Co.  
Foote Bros. Gear & Machine Corp.  
Gear Engineering & Mfg. Co., Inc.  
Hewitt-Robins, Inc.  
Johnson Gear & Mfg. Co., Ltd.  
Link-Belt Co.  
J. W. Minder Chain & Gear Co.  
Philadelphia Gear Works, Inc.  
Republic Electric & Development Co.  
Tulsa Winch Div., Vickers, Inc.  
Western Gear Corp.  
Westinghouse Electric Corp.

## GENERATORS—electric

Allis-Chalmers Mfg. Co.  
Century Electric Co.  
Continental Electric Co., Inc.  
Delco-Remy Div., General Motors  
Corp. (automotive)  
Enterprise Engine & Machinery Co.  
Fairbanks, Morse & Co.  
(gasoline, diesel)  
General Electric Co.  
Apparatus Sales Div.  
Howard Industries, Inc.  
Kato Engineering Co.  
Kurz & Root Co.  
The Leland Electric Co. Div.,  
American Machine & Foundry Co.  
Motor Generator Corp.,  
Hobart Brothers affiliate  
Ohio Carbon Co.  
D. W. Onan & Sons, Inc.  
Reliance Electric & Engineering Co.  
Republic Electric & Development Co.  
Robbins & Myers, Inc.  
Westinghouse Electric Corp.  
Worthington Corp.

## HANGERS—shaft

Boston Gear Works  
Dodge Mfg. Corp.  
Link-Belt Co.

## HOSE—air

Aero-Coupling Corp.  
Aeroquip Corp.  
The American Metal Hose Div.,  
American Brass Co.  
American Rubber Mfg. Co.  
Atlas Copco Pacific, Inc.  
The Bellows Co. of California  
Binks Manufacturing Co.  
The DeVilbiss Co.  
Eastman Pacific Co.  
Flexonics Corp.  
The Gates Rubber Co.  
Goodall Rubber Co.  
The B. F. Goodrich Co.  
Goodyear Tire & Rubber Co.  
Grover Smith Mfg. Co.  
Hewitt-Robins, Inc.  
The Imperial Brass Mfg. Co.  
Johnson Metal Hose, Inc.  
Lens Co.  
Lincoln Engineering Co.  
of California  
New York Belting & Packing Co.  
Perfecting Service Co.  
Raybestos-Manhattan, Inc.  
Resistoflex Corp.  
Rucker Co.  
Snap-Tite, Inc.  
Thermoid Co.  
Thor Power Tool Co.  
United States Rubber Co.  
The Weatherhead Co.  
Fort Wayne Div.

## HOSE—flexible metallic

Aeroquip Corp.  
American Metal Hose Div.,  
American Brass Co.  
Columbia Cable & Electric Corp.  
Flexible Tubing Corp. (non-metallic)  
Flexonics Corp.  
The Gates Rubber Co.  
Goodall Rubber Co.  
Hewitt-Robins, Inc.  
Johnson Corp.  
Johnson Metal Hose, Inc.  
Perfecting Service Co.  
Raybestos-Manhattan, Inc.  
Resistoflex Corp.  
Snap-Tite, Inc.  
Titeflex, Inc.

## HOSE—hydraulic

Aero-Coupling Corp.  
Aeroquip Corp.  
American Metal Hose Div.,  
American Brass Co.  
The American Rubber Mfg. Co.  
The Bruning Co.  
Eastman Pacific Co.  
Flexonics Corp.  
The Gates Rubber Co.  
Goodall Rubber Co.  
The B. F. Goodrich Co.  
Goodyear Tire & Rubber Co.  
Grover Smith Mfg. Corp.  
Hewitt-Robins, Inc.  
The Imperial Brass Mfg. Co.  
Joy Manufacturing Co.  
Lens Co.  
Lincoln Engineering Co.  
of California  
New York Belting & Packing Co.  
Parker Appliance Co.  
Raybestos-Manhattan, Inc.  
Resistoflex Corp.  
Rucker Co.  
Snap-Tite, Inc.  
Thermoid Co.  
United States Rubber Co.  
The Weatherhead Co.,  
Fort Wayne Div.

## HYDRAULIC CYLINDERS

See CYLINDERS, hydraulic

## HYDRAULIC MOTORS

See MOTORS, hydraulic

## INCREASERS—speed

The Falk Corp.  
Foote Bros. Gear & Machine Corp.  
Link-Belt Co.  
Lufkin Foundry & Machine Co.  
U. S. Electrical Motors, Inc.  
Western Gear Corp.  
Worthington Corp.

## INSTRUMENTS—

measuring and testing

Electric Mfg. Co.  
Arnold O. Beckman, Inc.  
Bailey Meter Co.  
Barber-Colman Co.  
Brown Instrument Div.,  
Minneapolis-Honeywell Co.  
Cleveland Fuel Equipment Co.  
W. C. Dillon & Co., Inc.  
Electro-Mechano Co.  
Electro Product Laboratories, Inc.  
Fenwal, Inc.  
Fielden Instrument Div.  
Robertshaw-Fulton Controls Co.  
Fischer & Porter Co.  
The Foxboro Co.  
Fulton Syphon Div.,  
Robertshaw-Fulton Controls Co.  
General Electric Co.  
Apparatus Sales Div.  
Haggen Chemicals & Controls, Inc.  
Leeds & Northrup Co.  
Miljan, Inc.  
Pie Design Corp. (precision  
instrument gears and parts)  
The Powers Regulator Co.  
Roots-Connersville Blower Div.,  
Dresser Industries, Inc.  
The Rucker Co.  
Schroeder Bros. Corp.  
Sperry Products, Inc.  
Teller & Cooper, Inc.  
United States Gauge Div.,  
American Machine & Metals, Inc.  
Westinghouse Electric Corp.  
Western Electrical Instrument Corp.,  
subsidiary of Daystrom, Inc.

## LACING—belt

Chicago Rawhide Mfg. Co.  
Clipper Belt Lacer Co. (equipment)  
Graton & Knight Co.  
Victor Balata & Textile Belting Co.

## LOAD CENTERS

Federal Pacific Electric Co.  
General Electric Co., Apparatus  
Sales Div.  
Kuhlman Electric Co.  
Leeds & Northrup Co.  
Moloney Electric Co.  
Sorgel Electric Co.  
Square D Co.  
Westinghouse Electric Corp.

## MOTOR BASES

See BASES, MOTOR

## MOTOR CONTROLS

See CONTROLS, electric, motor

## MOTORS—air

The Aro Equipment Corp.  
The Bellows Co. of California  
Binks Manufacturing Co.  
Densmore Engineering Co., Inc.  
Gardner-Denver Co.  
Grover Smith Mfg. Co.  
Ingersoll-Rand Co.  
Joy Manufacturing Co.  
Leeden Manufacturing Co.  
Leiman Bros., Inc.  
Link-Belt Co. (gear)  
Modernair Corp.  
National Seal Div.  
Ohio Carbon Co.  
Renco-Toledo, Inc.  
Rucker Co.  
Thor Power Tool Co.

## MOTORS—electric, DC

Allis-Chalmers Mfg. Co.  
Baldor Electric Co.  
Bodine Electric Co.  
Century Electric Co.  
Continental Electrical Co., Inc.  
Delco-Remy Div.,  
General Motors Corp. (starting)  
Diehl Manufacturing Co.  
Doerr Electric Corp.  
Fairbanks, Morse & Co.  
Franklin Electric Co., Inc.  
General Electric Co.  
Apparatus Sales Div.  
Kato Engineering Co.  
Kurz & Root Co.  
The Leland Electric Co. Div. of  
American Machine & Foundry Co.  
The Louis Allis Co.  
The Master Electric Co.  
The Peerless Electric Co.  
Reliance Electric & Engineering Co.  
Republic Electric & Development Co.  
Robbins & Myers, Inc.  
Thor Power Tool Co.  
Westinghouse Electric Corp.

## MOTORS—electric, poly-phase, AC

Allis-Chalmers Mfg. Co.  
Baldor Electric Co.  
Bodine Electric Co.  
Century Electric Co.  
Continental Electric Co., Inc.  
Diehl Manufacturing Co.  
Doerr Electric Corp.  
Fairbanks, Morse & Co.  
Franklin Electric Co., Inc.  
General Electric Co.  
Apparatus Sales Div.  
Kato Engineering Co.  
Kurz & Root Co.  
The Leland Electric Co. Div. of  
American Machine & Foundry Co.  
The Lima Electric Motor Co.  
The Louis Allis Co.  
The Master Electric Co.  
The Peerless Electric Co.  
Reliance Electric & Engineering Co.  
Republic Electric & Development Co.  
Reuland Electric Co.  
Robbins & Myers, Inc.  
A. O. Smith Corp.,  
Electric Motor Div.  
Sterling Electric Motors, Inc.  
Thor Power Tool Co.  
U. S. Electrical Motors, Inc.  
Wagner Electric Corp.  
Westinghouse Electric Corp.

# MOTORS, SINGLE-PHASE - SPROCKETS

## MOTORS—electric, single-phase, AC

Baldor Electric Co.  
Bodine Electric Co.  
Century Electric Co.  
Diehl Manufacturing Co.  
Doerr Electric Corp.  
Fairbanks, Morse & Co.  
Franklin Electric Co., Inc.  
General Electric Co.  
Apparatus Sales Div.  
Gleason-Avery, Inc.  
Kato Engineering Co.  
Kurz & Root Co.  
The Leland Electric Co., Div. of  
American Machine & Foundry Co.  
The Lima Electric Motor Co.  
The Louis Allis Co.  
The Master Electric Co.  
The Peerless Electric Co.  
Reuland Electric Co.  
Robbins & Myers, Inc.  
Safe-T-Mike Corp. (capacitors)  
A. O. Smith Corp.  
Electric Motor Div.  
U. S. Electrical Motors, Inc.  
Wagner Electric Corp.  
Westinghouse Electric Corp.

## MOTORS, GEAR

See GEARMOTORS

## MOTORS—hydraulic

Char-Lynn Co.  
The Commercial Shearing &  
Stamping Co.  
The Denison Engineering Co.  
Denmore Engineering Co., Inc.  
Hydraulic Power Div.  
Hydraulic Press Mfg. Co.  
a Div. of Koehring Co.  
Leden Manufacturing Co.  
The New York Air Brake Co.,  
Kalamazoo Div.  
The Oilgear Co.  
Racine Hydraulic & Machinery, Inc.  
Geo. D. Roper Corp.  
Rucker Co.  
Vickers, Inc.  
Webster Electric Co.

## MOTORS—variable speed

Bodine Electric Co.  
Brown Boveri Corp.  
Century Electric Co.  
Diehl Manufacturing Co.  
Doerr Electric Corp.  
Durametall Corp.  
(packing and seals)  
Eaton Manufacturing Co.,  
Dynamatic Div.  
Fairbanks, Morse & Co.  
Kurz & Root Co.  
The Lima Electric Motor Co.  
Link-Belt Co.  
The Louis Allis Co.  
The Master Electric Co.  
The Oilgear Co.  
Reliance Electric & Engineering Co.  
Republic Electric & Development Co.  
Sterling Electric Motors, Inc.  
U. S. Electrical Motors, Inc.  
Vickers, Inc.

## PACKINGS

L. P. Degen Belting Co. (leather &  
rubber)  
Goodall Rubber Co.  
Graton & Knight Co.  
(self-lubricating, molded, sheet)  
E. F. Houghton & Co.  
Johns-Manville Corp.  
New York Belting & Packing Co.  
J. E. Rhoads & Sons (leather)

## PANELBOARDS—electric

Bailey Meter Co.  
Bull Dog Electric Products Co.  
Cleveland Fuel Equipment Co.  
Crouse-Hinds Co.  
Cutler-Hammer, Inc.  
Delta Switchboard Co.  
Federal Pacific Electric Co.  
Fischer & Porter Co.  
General Control Co., Inc.  
General Electric Co.  
Apparatus Sales Div.

General Electric Co., Circuit  
Protective Devices Dept.  
(component parts)  
Hoffman Engineering Corp.  
I-T-E Circuit Breaker Co.  
Industrial Control Panel Co.  
Johns-Manville Corp.  
Leeds & Northrup Co.  
The Louis Allis Co.  
Republic Electric & Development Co.  
Rundel Electric Co. (special only)  
Square D Co.  
Suller & Cooper, Inc.  
The Wadsworth Electric Mfg.  
Co., Inc.  
Westinghouse Electric Corp.

## PILLOW BLOCKS

Ahlberg Bearing Co.  
American Brake Shoes Co.  
Charles Bond Co.  
Boston Gear Works  
Chain Belt Co.  
Congress Drives Div.  
Dodge Manufacturing Corp.  
Electro-Nite Carbon Co.  
Hewitt-Robbins, Inc.  
The Jeffrey Mfg. Co.  
Link-Belt Co.  
Randall Graphite Bearings, Inc.  
S K F Industries, Inc.  
Shafer Bearing Div., Chain Belt Co.  
Standard Pressed Steel Co.  
Stephens-Adamson Mfg. Co.  
Webster Manufacturing, Inc.

## PINIONS

See GEARS

## PRESSURE REGULATORS

See REGULATORS, pressure

## PULLEYS

Allis-Chalmers Mfg. Co.  
American Pulley Co.  
Amplex Div., Chrysler Corp.  
Boston Gear Works  
Chain Belt Co.  
Congress Drives Div.  
The Dayton Rubber Co.  
R. & J. Dick Co., Inc.  
Dodge Manufacturing Corp.  
Equipment Engineering Co.  
Flaton Machine Works, Inc.  
The Gates Rubber Co.  
Gerbing Manufacturing Corp.  
Hewitt-Robbins, Inc.  
The Jeffrey Mfg. Co.  
Link-Belt Co.  
Lovejoy Flexible Coupling Co.  
(variable speed)  
Reeves Pulley Co. Div., Reliance  
Electric & Engr. Co. (vari-speed)  
United States Rubber Co.  
Yuba Manufacturing Co.

## PUMPS—hydraulic power

Adel Precision Products,  
Div. General Metals Corp.  
Be-Gu Manufacturing Co.  
Char-Lynn Co.  
The Commercial Shearing &  
Stamping Co.  
The Denison Engineering Co.  
Fairbanks, Morse & Co.  
Gardner-Denver Co.  
Grover Smith Mfg. Corp.  
Hydraulic Power Div.,  
Hydraulic Press Mfg. Co.,  
a Div. of Koehring Co.  
Lassman, Benjamin & Son  
Lincoln Engineering Co.  
of California  
Madden Corp.  
National Seal Div.  
The New York Air Brake Co.,  
Kalamazoo Div.  
The Oilgear Co.  
Racine Hydraulics & Machinery, Inc.  
Rivett Lathe & Grinder, Inc.  
Rockwell Manufacturing Co.  
Geo. D. Roper Corp.  
Rucker Co.  
Tuthill Pump Co.  
Vickers, Inc.  
Webster Electric Co.  
Worthington Corp.

## PUMPS—vacuum

Fuller Co.  
Leiman Bros., Inc.  
Roots-Connorsville Blower Div.,  
Dresser Industries, Inc.

## RECTIFIERS

Allis-Chalmers Mfg. Co.  
American Pulley Co.  
American Rectifier Corp.  
Brown Boveri Corp.  
Christie Electric Corp.  
Electro Products Laboratories, Inc.  
General Electric Co.  
Apparatus Sales Div.  
I-T-E Circuit Breaker Co.  
(germanium)  
Rundel Electric Co. (d-c.)  
Safe-T-Mike Corp.  
Weltronic Co.  
Westinghouse Electric Corp.

## REDUCERS, SPEED—

bevel gear

American Pulley Co.  
David Brown, Inc.  
The Falk Corp.  
Foote Bros. Gear & Machine Corp.  
Hewitt-Robbins, Inc.  
The Louis Allis Co.  
Lufkin Foundry & Machine Co.  
(herringbone)  
Morse Chain Co.  
Tulsa Winch Div., Vickers Inc.  
U. S. Electrical Motors, Inc.  
Western Gear Corp.  
Westinghouse Electric Corp.

## REDUCERS, SPEED—

helical gear

American Pulley Co.  
David Brown, Inc.  
The Falk Corp.  
Foote Bros. Gear & Machine Corp.  
Hart Reduction Pulley Co.  
Hewitt-Robbins, Inc.  
Leden Manufacturing Co.  
Link-Belt Co.  
The Louis Allis Co.  
Morse Chain Co.  
Stephens-Adamson Mfg. Co.  
Sterling Electric Motors, Inc.  
Tulsa Winch Div., Vickers, Inc.  
U. S. Electrical Motors, Inc.  
Western Gear Corp.  
Westinghouse Electric Corp.  
Worthington Corp.

## REDUCERS, SPEED—

planetary gear

David Brown, Inc.  
Foote Bros. Gear & Machine Corp.  
Hart Reduction Pulley Co.  
Hewitt-Robbins, Inc.  
Tulsa Winch Div., Vickers, Inc.  
Western Gear Corp.  
Westinghouse Electric Corp.

## REDUCERS, SPEED—

shaft mounted

American Pulley Co.  
David Brown, Inc.  
Dodge Manufacturing Corp.  
The Falk Corp.  
Foote Bros. Gear & Machine Corp.  
Hart Reduction Pulley Co.  
Link-Belt Co.  
Tulsa Winch Div., Vickers, Inc.  
Western Gear Corp.  
Westinghouse Electric Corp.

## REDUCERS, SPEED—spur gear

David Brown, Inc.  
Foote Bros. Gear & Machine Corp.  
Hewitt-Robbins, Inc.  
Link-Belt Co.  
Tulsa Winch Div., Vickers Inc.  
Western Gear Corp.  
Westinghouse Electric Corp.

## REDUCERS, SPEED—worm gear

American Stock Gear Div.,  
Perfection Gear Co.  
Charles Bond Co.  
Boston Gear Works  
David Brown, Inc.  
The Cleveland Worm & Gear Co.

Foote Bros. Gear & Machine Corp.  
Hewitt-Robbins, Inc.  
Janette Electric Manufacturing Co.  
Link-Belt Co.  
The Louis Allis Co.  
Morse Chain Co.  
Republic Electric & Development Co.  
Tulsa Winch Div., Vickers, Inc.  
U. S. Electrical Motors, Inc.  
Western Gear Corp.  
Westinghouse Electric Corp.

## REGULATORS—pressure

Binks Manufacturing Co.  
Clary Corp.  
Copes-Vulcan Div., Blaw-Knox Co.  
Cutler-Hammer, Inc.  
Delco-Remy Div.,  
General Motors Corp. (generator)  
The DeVilbiss Co.  
Fisher Governor Co.  
Hagan Chemical & Controls, Inc.  
Hannafin Corp. (air line)  
Jordan Corp.  
Leden Manufacturing Co.  
Leslie Co.  
Lincoln Engineering Co.  
of California  
M-B Products, Inc.  
Mason-Neilan Div.,  
Worthington Corp.  
The Mercoid Corp.  
C. A. Norgren Co.  
Perfecting Service Co.  
The Powers Regulator Co.  
Rockwell Manufacturing Co.  
Rucker Co.  
Sarco Co., Inc.  
S-P Manufacturing Corp.  
Strong, Carlisle and Hammond Div.  
Westinghouse Air Brake Co.,  
Industrial Products Div.  
Weston Electrical Instrument Corp.,  
subsidiary of Daystrom, Inc.

## ROLLER CHAIN

See CHAINS FOR DRIVES

## SHEAVES

Allis-Chalmers Mfg. Co.  
American Pulley Co.  
The Dayton Rubber Co.  
R. & J. Dick Co., Inc.  
Dodge Manufacturing Corp.  
Durkee-Atwood Co.  
Equipment Engineering Co.  
Flaton Machine Works, Inc.  
Fort Worth Steel & Machinery Co.  
The Gates Rubber Co.  
Gerbing Manufacturing Corp.  
Goodall Rubber Co.  
Hewitt-Robbins, Inc.  
The Jeffrey Mfg. Co.  
J. W. Minder Chain & Gear Co.  
Webster Manufacturing, Inc.  
Worthington Corp.  
Yuba Manufacturing Co.

## SPEED INCREASERS

See INCREASERS, speed

## SPEED REDUCERS

See REDUCERS, speed

## SPROCKETS

Advance Gear & Machine Corp.  
American Stock Gear Div.,  
Perfection Gear Co.  
Amplex Div., Chrysler Corp.  
Atlas Chain & Mfg. Co.  
Charles Bond Co.  
Boston Gear Works  
Chain Belt Co.  
Cullman Wheel Co.  
Diamond Chain Co., Inc.  
R. & J. Dick Co., Inc.  
Flaton Machine Works, Inc.  
Dodge Manufacturing Corp.  
Gear Engineering & Mfg. Co., Inc.  
The Jeffrey Mfg. Co.  
Johnson Gear & Mfg. Co., Ltd.  
Link-Belt Co.  
J. W. Minder Chain & Gear Co.  
Morse Chain Co.  
Philadelphia Gear Works, Inc.  
Ramsey Chain Co., Inc.  
Union Chain & Mfg. Co.  
Webster Manufacturing, Inc.  
Western Gear Corp.  
Whitney Chain Co.  
Yuba Manufacturing Co.



## STEAM TRAPS - WIRE & CABLE

### STEAM TRAPS

See TRAPS, steam

### SUBSTATIONS—unit

Allis-Chalmers Mfg. Co.  
Delta Switchboard Co.  
Federal Pacific Electric Co.  
General Electric Co.  
Apparatus Sales Div.  
I-T-E Circuit Breaker Co.  
Moloney Electric Co.  
Rundel Electric Co.  
Sorgel Electric Co.  
Westinghouse Electric Corp.

### SWITCHES—automatic

Allen-Bradley Co.  
Automatic Switch Co.  
Cutler-Hammer, Inc.  
Fenwal Inc.  
General Control Co., Inc.  
General Electric Co.  
Apparatus Sales Div.  
I-T-E Circuit Breaker Co.  
The Mercoid Corp.  
Micro-Switch Div.,  
Minneapolis-Honeywell Co.  
Republic Electric & Development Co.  
Rundel Electric Co.  
Square D Co.  
Taller & Cooper, Inc.

### SWITCHES—electric

Allen-Bradley Co.  
Automatic Switch Co.  
Bull Dog Electric Products Co.  
The Clark Controller Co.  
Cutler-Hammer, Inc.  
Electro Snap Switch & Mfg. Co.  
Federal Pacific Electric Co.  
Fenwal, Inc.  
Furnas Electric Co.  
General Control Co., Inc.  
General Electric Co.  
Apparatus Sales Div.  
General Electric Co., Circuit  
Protective Devices Dept. (safety)  
General Electric Co.,  
Construction Materials Div.  
Harvey Hubbell, Inc.  
I-T-E Circuit Breaker Co.  
Licon Switch & Control Div.,  
Illinois Tool Works  
McGill Manufacturing Co.  
The Mercoid Corp.  
Micro-Switch Div.,  
Minneapolis-Honeywell Co.  
Pass & Seymour, Inc.  
Republic Electric & Development Co.  
Rundel Electric Co.  
Square D Co.  
Taller & Cooper, Inc.  
The Wadsworth Electric Mfg.  
Co., Inc.  
Welttronic Co.

### SWITCHGEAR EQUIPMENT

Allis-Chalmers Mfg. Co.  
Automatic Switch Co.  
Brown Boveri Corp.  
Bull Dog Electric Products Co.  
Delta Switchboard Co.  
The Electric Storage Battery Co.  
Federal Pacific Electric Co.

G & W Electric Specialty Co.  
General Control Co., Inc.  
General Electric Co.  
Apparatus Sales Div.  
I-T-E Circuit Breaker Co.  
Republic Electric & Development Co.  
Rundel Electric Co.  
Square D Co.  
Taller & Cooper, Inc.  
Westinghouse Electric Corp.

### TIMING BELTS

See BELTS, timing

### TORQUE CONVERTERS

Twin Disc Clutch Co.  
Western Gear Corp.

### TRANSFORMERS

Allis-Chalmers Mfg. Co.  
Brown Boveri Corp.  
Federal Pacific Electric Co.  
General Electric Co.  
Apparatus Sales Div.  
Hevi-Duty Electric Co.  
Hill Transformer Co., Inc.  
I-T-E Circuit Breaker Co.  
Kuhlman Electric Co.  
Moloney Electric Co.  
Sorgel Electric Co.  
Wagner Electric Corp.  
Westinghouse Electric Corp.

### TRANSMISSION, VARIABLE

#### SPEED

Allis-Chalmers Mfg. Co.  
American Pulley Co.  
Boston Gear Works  
The Cleveland Worm & Gear Co.  
R. & J. Dick Co., Inc.  
Dodge Manufacturing Corp.  
Eaton Manufacturing Co.,  
Dynamatic Div.  
Electro-Devices, Inc.  
Fairchild Engine & Airplane Corp.,  
Speed Control Div.  
Gerbing Manufacturing Corp.  
Graham Transmissions, Inc.  
Lewellen Manufacturing Co.  
Lima Electric Motor Co.  
Link-Belt Co.  
The Louis Allis Co.  
Morse Chain Co.  
National Seal Div.  
The Oilgear Co.  
Philadelphia Gear Works, Inc.  
Reeves Pulley Co. Div.,  
Reliance Electric & Engrg. Co.  
Reliance Electric & Engineering Co.  
Revco, Inc.  
Rockwell Manufacturing Co.  
Salsbury Corp.  
Sterling Electric Motors, Inc.  
U. S. Electrical Motors, Inc.  
V-Belt Clutch Co.  
Vickers, Inc.  
Western Gear Corp.  
Worthington Corp.  
Zidell Machinery & Supply Co.

### TRAPS—steam

Armstrong Machine Works

Crane Co.  
Hoffman Specialty Manufacturing Corp.  
M-B Products, Inc.  
National U. S. Radiator Corp.  
Perfecting Service Co.  
Powers Regulator Co.  
Sarco Co., Inc.  
Strong, Carlisle & Hammond Div.

### UNIT SUBSTATIONS

See SUBSTATIONS, UNIT

### VALVES—air power line

Airmatic Valve, Inc.  
Alkon Products Corp.  
Atkomatic Valve Co., Inc.  
Automatic Switch Co.  
Barksdale Valves  
The Bellows Co. of California  
Chapman Valve Manufacturing Co.  
Circle Seal Products Co., Inc.  
Clary Corp.  
Copes-Vulcan Div., Blaw-Knox Co.  
(pressure reducing)  
Crane Co.  
Densmore Engineering Co., Inc.  
Flacher & Porter Co.  
The Foxboro Co.  
Galland-Henning, Nopak Div.  
Grover Smith Mfg. Corp.  
Hanna Engineering Works  
Hannifan Corp.  
The Imperial Brass Mfg. Co.  
Jordan Corp.  
L & L Manufacturing Co.  
Ledeon Manufacturing Co.  
Leslie Co.  
Lincoln Engineering Co.  
of California  
Lunkensheimer Co.  
Mason-Neilan Div.,  
Worthington Corp.  
Mechanical Air Controls, Inc.  
Modenair Corp.  
New Products Corp.  
C. A. Norgren Co.  
Numatics, Inc.  
Philadelphia Gear Works, Inc.  
The Powers Regulator Co.  
Renco-Toledo, Inc.  
Rivett Lathe & Grinder, Inc.  
Robbins Aviation  
Rockwell Manufacturing Co.  
Ross Operating Valve Co.  
Rucker Co.  
Skinner Electric Valve Div.  
Snap-Tite, Inc.  
S-P Manufacturing Corp.  
Valvair Corp.  
Versa Products Co., Inc.  
Walworth Co.  
Westinghouse Air Brake Co.,  
Industrial Products Div.

### VALVES—hydraulic power line

Adel Precision Products, Div.,  
General Metals Corp.  
Airmatic Valve, Inc.  
Alkon Products Corp.  
Atkomatic Valve Co., Inc.  
Automatic Switch Co.  
Barksdale Valves

The Bellows Co. of California  
Chapman Valve Manufacturing Co.  
Char-Lynn Co.  
Circle Seal Products Co., Inc.  
Clary Corp.  
The Commercial Shearing & Stamping Co.  
The Denison Engineering Co.  
Densmore Engineering Co., Inc.  
Dukes Co., Inc.  
Galland-Henning, Nopak Div.  
Hanna Engineering Works  
Hydraulic Power Div.,  
Hydraulic Press Mfg. Co.,  
a Div. of Koehring Co.  
The Imperial Brass Mfg. Co.  
Jordan Corp.  
L & L Manufacturing Co.  
Ledeon Manufacturing Co.  
Leslie Co.  
Lincoln Engineering Co.  
of California  
Lunkensheimer Co.  
Modenair Corp.  
New Products Corp.  
New York Air Brake Co.,  
Kalamazoo Div.  
Parker Appliance Co.  
Powers Regulator Co.  
Racine Hydraulics & Machinery, Inc.  
Rivett Lathe & Grinder, Inc.  
Robbins Aviation  
Rockwell Manufacturing Co.  
Rucker Co.  
Skinner Electric Valve Div.  
Snap-Tite, Inc.  
S-P Manufacturing Corp.  
Valvair Corp.  
Versa Products Co., Inc.  
Vickers, Inc.  
Walworth Co.  
Webster Electric Co.

### VARIABLE SPEED MOTORS

See MOTORS, variable speed

### VARIABLE SPEED

#### TRANSMISSIONS

See TRANSMISSION,  
variable speed

### V-BELTS

See BELTS, V

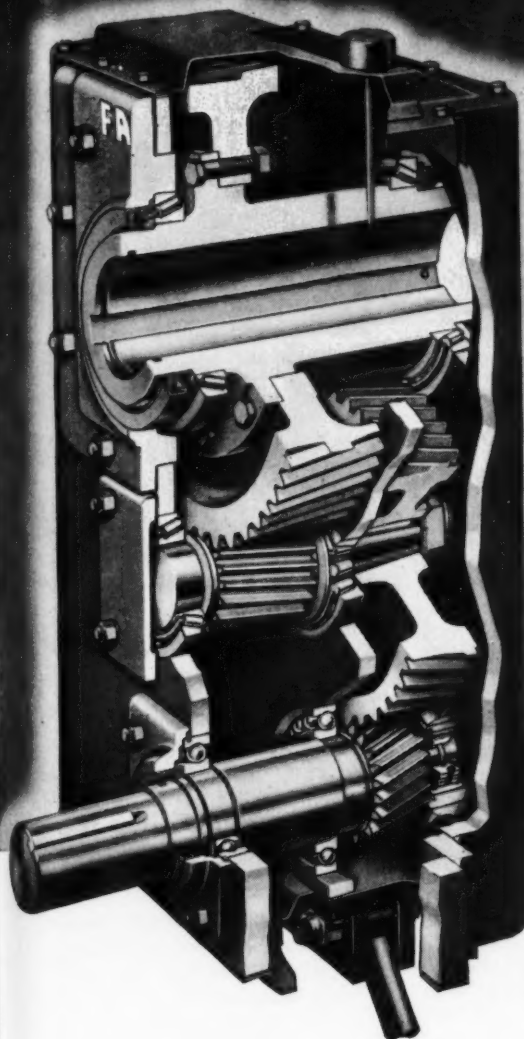
### WIRE & CABLE—electric

Anaconda Wire & Cable Co.  
Collyer Insulated Wire Co., Inc.  
Columbia Cable & Electric Corp.  
G & W Electric Specialty Co.,  
(high voltage cable accessories)  
General Cable Corp.  
General Electric Co.,  
Construction Materials Div.  
Miljan, Inc.  
National Electric Products Corp.  
The Okonite Co.  
Phelps Dodge Copper Products Corp.  
Rockbestos Products Corp.  
Rome Cable Corp.  
Simplex Wire & Cable Co.  
Triangle Conduit & Cable Co., Inc.  
United States Rubber Co.  
Western Insulated Wire Co.  
Whitney Blake Co.

Using this directory can save you time and money because manufacturers listed all have Western sales and engineering representation.

*New* ...LARGER...ALL-STEEL!

# The FALK 315J Shaft Mounted Drive



- for higher horsepower
- for lower output speeds

## Check These Features

- New* — 3-wall, one-piece housing provides double the ability of cast iron to withstand external impact or shock loads.
- New* — ratio range—5:1, 14:1 or 25:1. Higher ratio range makes possible lower output speeds...smaller sheaves...standard, rather than slow-speed, motor.
- New* — ease of maintenance. All revolving elements can be easily replaced in the field, on the jobsite! Inspection covers permit quick inspection of gears and bearings. Dipstick provides quick check on lubricant.
- New* — longer center distance between shafts allows use of larger sheave on input shaft. Unit may be mounted with input shaft next to driven machine, and with motor mounted directly under driven shaft.

THE NEW 315J...  
FROM 2 HP AT 5 RPM  
TO 50 HP AT 359 RPM

## PROMPT DELIVERY

Standard units are available for off-the-shelf shipment from factory, warehouse or distributor stock.

## LET US HELP YOU

Your Falk Representative or Authorized Falk Distributor will gladly review your applications and offer suggested selections—without obligation.

Write for Bulletin 7100

# FALK

...a good name in industry

## The new Falk 315J

gives you these famous Falk advantages—

Falk extra-depth, extra-capacity gear teeth—plus the extra efficiency (98½% per gear mesh) of helical gears for maximum power utilization.

Through-hollow shaft design for easy installation, with internal groove to permit use of bearing puller when dismantling unit. Hollow shaft also permits use of unit on through-shaft applications.

Tie rod fastened to steel housing by steel bracket with bolt in double shear. Shock load on tie rod will not damage housing.

## THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN

Representatives and Distributors in Most Principal Cities

Manufacturers of Quality Gear Drives and Flexible Shaft Couplings

...for more details, circle No. 102 on Reader Service Postcard  
See Directory listing page 118

# HELPFUL LITERATURE for the West's plant operating executives

FOR YOUR FREE COPIES, circle appropriate key numbers on postcard, page 141

## 59 short-cuts for drafting, engineering

This idea book of time-saving tips for the draftsman and engineer was compiled from suggestions of leading men in the field who were queried about their techniques. New approaches to old problems in the manual include 22 drafting short cuts, 9 engineering data tips, 18 board timesavers and 10 helpful calculating ideas. Typical topics are "Dividing a Circle Into Parts," "Constructing an Approximate Ellipse," "Determining Gear Inertia" and "Changing a Solid Line to a Dotted Line." *Frederick Post Co.*

... for your copy, circle No. 251

## 72-page catalog gives information on wire

Ordering specifications, diagrams and descriptions of various types and grades of wire make up this 72-page illustrated catalog that covers the complete Wickwire line. Types included are low carbon coarse wire, both low and high carbon fine and specialty wire, and flat and shaped wire. In a section about the manufacture of wire, special emphasis is given to the rigid testing and quality control of the product. *Colorado Fuel & Iron Corp.*

... for your copy, circle No. 252

## Finger tip facts on worm gear drives

Worm gear drives and their application to mechanical power transmission is the subject of this 16-page manual that covers a full range of types in speed reducers. Horizontal right angle reducers, vertical reduc-

tion units, cooling tower and feeder table drives, fan cooled units and a variety of specialized reducers for custom-design requirements are described and pictured. *The Cleveland Worm & Gear Co.*

... for your copy, circle No. 253

## 186 pages of data on power transmission

Power transmission data compiled and revised to meet today's engineering standards and tabulations fill this 186-page handbook that will help you plan proper transmission for any drive. Engineering charts, tables and formulae are included and the expanded gear section of the manual has complete dimensions on the firm's standard spur, bevel, spiral, helical, worm gears and steel rack. In the speed reducer section you'll get specifications, dimensions and mechanical data needed to select the proper reducer in relation to required ratios, horsepower, torque and installation dimensions. *The Ohio Gear Co.*

... for your copy, circle No. 254

## How to make your crane selection easy

This manual's novel cataloging method turns selection and ordering of overhead cranes into a simple job. It has a series of marginally-tabbed pages that are horizontally split at the center so the user can flip to the top half-page showing the trolley with capacity he needs, then flip to the bottom half-page tabbed for the bridge span required. The resulting full page line-up gives him a general description and picture of the trolley and bridge his job needs and illustrates them combined in his particular crane. Following pages give details on con-

struction, electrical equipment, etc. Other aids to easy ordering are a section explaining basic factors to be considered in buying cranes and a fill-in form for price quotations. Cranes covered in the book have capacities through 20 tons and spans through 80 ft. *Shaw-Box Crane & Hoist Div., Manning, Maxwell & Moore, Inc.*

... for your copy, circle No. 255

## Data on automotive spray booths and equipment

A manual that covers the complete range of automotive and truck spray booths and equipment for them includes a simplified method of identifying component parts of Spraying complete spray booths. The catalog gives details on packaged "one price tag" booths designed for either owner or factory-supervised installation, as well as on a complete line of parts and accessories for use on owner-constructed booths. *Spraying, Inc.*

... for your copy, circle No. 256

## 108-page handbook of maintenance data

Over 30 construction tables, guides and time-saving charts appear in this manual prepared for engineers, architects, contractors and purchasing agents in the West. Designed to help solve problems in building maintenance, construction and engineering, it has three indices for easy reference to over 95 specialty products made by the firm. With each product description is a brief outline of recommended uses, methods of application, covering capacity, colors, packaging and shipping data. *A. C. Horn Co., Inc., a subsidiary of Sun Chemical Corp.*

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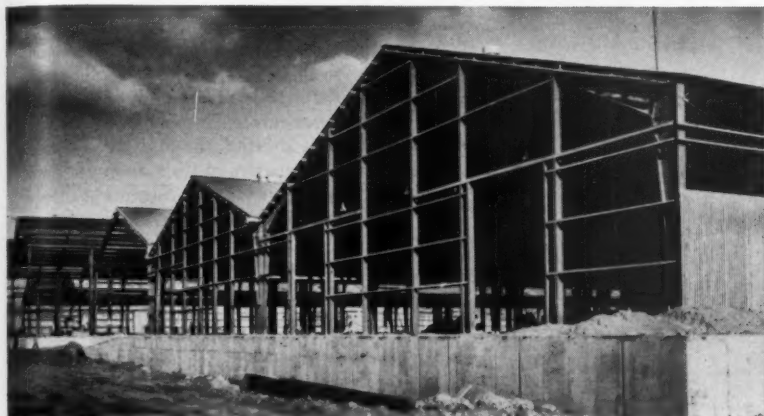
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... for more details, circle No. 103 on Reader Service Postcard

WESTERN INDUSTRY — September 1957



# THEY'RE BUILDING THE WEST ...WITH KAISER STEEL



**SOULE STEEL**, San Francisco, is one of the West's largest fabricators of standard steel buildings for industry, commerce and agriculture. Soule is currently erecting the West's largest rigid frame steel building of all-bolted construction—this 560,000 square-foot supply depot for General Dynamics near San Diego.

**CAL-DAK**, San Gabriel, California, is the nation's largest manufacturer of tray tables and hostess accessories. Specializing in work-saving, quality housewares, Cal-Dak has turned out millions of TV tray tables since they were first introduced in 1948.



**THESE COMPANIES** are playing an important role in the vigorous growth of the West. They are among the hundreds of manufacturers, fabricators and distributors who rely on Kaiser Steel's diversified output of steel products. To serve these growing industries, Kaiser Steel is going forward with a \$194,000,000 expansion program that will virtually *double* present steel-making capacity...making Kaiser Steel the largest steel producer west of the Mississippi by 1958.



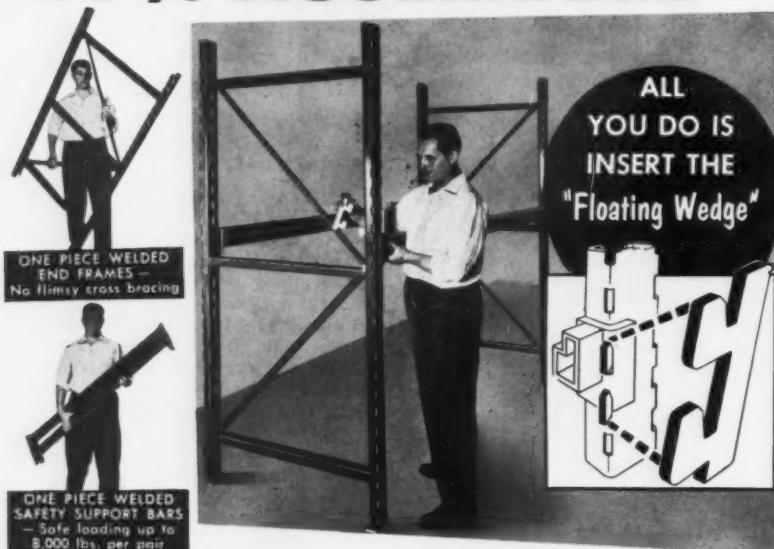
## Kaiser Steel

built to serve the growing West

**Steel Mill Products:** plates • hot rolled strip and sheet • cold rolled strip and sheet • tin plate • continuous weld pipe • electric weld pipe • alloy and carbon bars • bar shapes • structural shapes  
**Fabricating Division:** steel fabrication for construction, aircraft, missile and other industries • expanded fusion weld pipe • reinforced concrete pipe • tanks • For specifications, write: **KAISER STEEL CORPORATION** • Los Angeles • Oakland • Seattle • Portland • Phoenix • Denver • Tulsa • New York

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- NO BOLTS OR NUTS!
- NO HAND TOOLS!
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- NO "SKILL" REQUIRED!
- NO SWAY Or Cross Bracing!
- QUICKLY ERECTED!
- INSTANTLY REARRANGED!
- SIMPLY ADJUSTED!
- EASILY RELOCATED!
- ALL PARTS 100% REUSABLE!

**Plus  
"BUILT-IN"  
SAFETY!**

Sturdi-Bilt's prefabricated factory welded components let you set up your storage with tested, predetermined, controlled load factors. The human element is eliminated — there is no risk of labor variations during field assembly. Write for Sturdi-Bilt's special "Load Chart" and complete details.

\*U.S. Patent No. 2760650 Other patents pending.

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FASTEST INSTALLATION - EASIEST ADJUSTABILITY**



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...for more details, circle No. 105 on Reader Service Postcard

## Titanium fact file is handy reference guide

Key data on titanium's advantages, properties, metallurgy and machining are given in a 24-page fact file prepared as an information and reference piece for design, materials and production engineers. There is production information on machining, forming and welding, and data on aspects of the firm's testing, quality control and service engineering. Tabular information includes a comparison of titanium's physical properties with those of other pure metals, mechanical properties for annealed titanium and its alloys, and corrosion-resistance to the metal. *Mallory-Sharon Titanium Corp.*

... for your copy, circle No. 258

## Guide book for Helwig line of carbon brushes

Ten pages of popular make electric tools such as drills, grinders, saws, sanders, hammers, etc., with their catalog numbers and those of brushes for use with them make up the major part of this manual. Illustrations of over 30 brush types that come in hundreds of sizes fill two additional pages. There is also a data sheet for ordering special brushes and a table of popular sizes and grades of industrial brushes, with catalog numbers for each. *Helwig Co.*

... for your copy, circle No. 259

## 10-page manual describes multi-purpose portable lift

A dozen case history pictures, product photos labeled to show distinctive features, and detailed illustrations of component parts are combined in this manual about the Oster portable lift, with the Power-Pak 12-v. packaged

**LUFKIN**



**TAPE RULES**

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...for more details, circle No. 106

**WESTERN INDUSTRY — September 1957**

unit that comes in both hand and battery powered hydraulic models. A specification table gives data about five standard models with 500 to 2,000 lb. lift capacity, and a chart, with text, tells you how to select the correct lift for your needs. *The Oster Manufacturing Co.*

... for your copy, circle No. 260

### Copper, copper-alloy specifications index

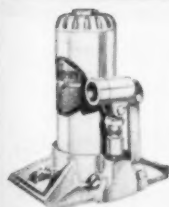
Section 1 of this three-part, 28-page, guide lists the most generally used alloys and products of the firm, with applicable specifications of eight agencies—ASTM, ASME, AWS, SAE, AMS, federal, military and joint Army-Navy. Section 2 lists specs numerically with brief descriptions of materials as to alloy, grade, type, temper, etc. Section 3, new with this edition, tabulates by alloy numbers the chemical compositions of all Anaconda metals covered by standard specifications, arranged for quick cross reference to Sections 1 and 2. *The American Brass Co.*

... for your copy, circle No. 261

### New uses for magnetic tape in industry

You're invited to become a tape recording expert by the reading of this 16-page manual about magnetic tape instrumentation which sets forth the functional capabilities of tape recorders and the use of magnetic tape for recording scientific research and industrial process data. It deals mainly with four categories—data acquisition, data storage and transfer, time delay and programming—and cites diverse specific uses in industry. Practical aspects, such as compact storage of data, easy duplication, low-cost, etc., of instrumentation are explained. A glossary of terms peculiar to this equipment is included. *Instrumentation Div., Ampex Corp.*

... for your copy, circle No. 262



**Blackhawk Hydraulic Jacks**

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COMPANY**

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OVERHEAD  
plant space?**

It costs money to light, heat and shelter overhead plant space. Get a return on your investment. Use this space to move or store materials with CM Hoists. You'll have more valuable floor space for other operations.



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WIRE ROPE ELECTRIC HOISTS**  
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He does his job three times as fast with a Robinson . . . the original and first quality wire twister. He saves two thirds the time it used to take to safety wire. Your labor force can do the same . . . save you up to \$144.00 on every engine wired, if you will provide them with this Robinson 3-way tool: plier, cutter, twister.



#### WRITE TODAY FOR THIS FULLY ILLUSTRATED BROCHURE

Complete details are yours in this colorful new brochure. Write to

Ralph C. Robinson Co., Inc., Dept. IB, 2516 Crosby Way, North Sacramento 15, California.



...for more details, circle No. 109

### How to eliminate costly vibration and its effects

Vibration—how it wears out equipment and adds to your production costs and how it can be controlled and eliminated—is the subject of this manual on the vibration meter, a portable tool for quick analysis of vibration-caused problems. It presents technical data on the meter's operation, a detailed drawing to explain how the tool works, a specification chart, facts on vibrational velocity, displacement and frequency determination. A supplemental price list covers the meters as well as accessories and supplemental devices. *Consolidated Electrodynamics Corp.*

... for your copy, circle No. 263

### Facts on a-c motor starters and contactors

A complete line of motor starters and contactors in sizes 4, 5 and 6 (Type 425), 50 to 400 hp. is covered in a 12-page selection manual that includes units for application to practically all types of drives, including pumps, crushers, blowers, fans, screens and furnace controls. Details are given for design features that provide full rated capacity, maximum motor protection, longer life and easy

### Electrical conductor code chart for your wall

Bringing together for the first time in a single piece of literature all present and past code names designations for aluminum electrical conductor, this one-piece guide eliminates inconvenience of numerous reference forms, many of them outdated. Measuring 28 x 29 in., and printed on Texoprint, a washable, crack-resistant plastic paper, the chart lists alphabetically more than 600 code names and specifies type and size of products. Adjacent tables provide more detailed data on coverings, messengers, sizes and strandings with British, as well as United States, standard tables included. *Kaiser Aluminum & Chemical Sales, Inc.*

... for your copy, circle No. 264

maintenance. The booklet describes the ACBO arc centering blowout principle in the contactors and includes specifications and illustrations of the units. *Allis-Chalmers Mfg. Co.*

... for your copy, circle No. 265

### Trouble chart featured in better welding guide

A trouble chart that lists ten common welding problems, their cause and solution is one feature of this 40-page manual, that includes a fold-out section with a comparison chart showing several popular brands of electrodes and gas rods for welding. Another feature is a table of hardness conversion numbers for steel. The 4 x 9 in. book is filled with tips to better welding and ordering data for many types of electrodes, rods and welding equipment for all purposes. *Marquette Manufacturing Co., Inc.*

... for your copy, circle No. 266

## ELIMINATE

Air Conditioning and Boiler Scale

## Corrosion

### Reduce

Plant Operating Costs With a

### Packard Water Conditioner

- No chemicals added
- No minerals destroyed
- No moving parts
- No servicing
- No maintenance
- Easy to install
- Guaranteed for ten years

#### Water

Conditioners of Calif., Inc.

Calif. Distributors  
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Territories Available  
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OR PHONE TODAY  
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Inspections of Installations invited.

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**RIGID**



Pipe Wrenches

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**HOWARD  
SUPPLY  
COMPANY**

...for more details, circle No. 111

...for more details, circle No. 110

### Two-way circular communication system

Basic standards of automation communication control and how Dictograph systems meet them is the subject of this 20-page illustrated book. It discusses why such control is vital and indispensable to business and industry, how it cuts "workpost absenteeism" and reduces telephone service costs. Included are facts on various units or systems for organization planned communication, general intercommunication, paging, music and loudspeaking purposes, with pictures of different models. Dictograph Products, Inc.

... for your copy, circle No. 267

### Rapid reversing motors for machine tools

A four-page bulletin, GEA-6645, gives design and application data on Type KR 1½ to 125 hp. motors, which have been developed specifically to operate machine tools that require frequent stops, starts and reversals under heavy loads. A special rotor and stator design reduces heat generation in the stator, resulting in longer insulation life and a greater number of permissible starts. General Electric Co.

... for your copy, circle No. 268

### Data on devices for pneumatic control

Pneumatic control systems, their advantages and applications are described in this manual's 12 pages. Applications are presented in the form of problem and solution, with detailed drawings for further classification. Valves, positioning devices, force device cylinders are covered, plus several types of air accessories. Westinghouse Air Brake Co.

... for your copy, circle No. 269

### Contractors



### Wheelbarrows

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**HOWARD SUPPLY COMPANY**

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on the job experience proves it...

you get the most  
for your money when you buy

## MATHEWS CONVEYERS



A system of double-deck live roller conveyers handling tote pans in a modern machine shop. Pans are deflected to the machines off the top deck. Empties return on bottom deck.

Whatever the conveying problem might be—whether it involves the handling of cartons, cases, or bags—Mathews builds the equipment to do the job in the best way. You can be sure of a complete service from planning through installation. You get the benefit of over 50 years of experience in continuous flow materials handling, and a product that is guaranteed to stay on the job. That is why we believe you get the most for your money when you buy Mathews Conveyers.



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**MATHEWS**  
*Fifty Years of Leadership in Mechanized Handling*

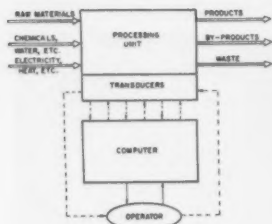
... for more details, circle No. 113 on Reader Service Postcard

# NEW EQUIPMENT for Western plant operation, production, and maintenance

USE RIP-OUT POSTCARD, page 141, for more information on products described

## DIGITAL CONTROL COMPUTER

... fully transistorized, provides automatic control for industrial processes



Bringing automation closer to reality than many industry people realize is the announcement of this revolutionary computer unit, specifically designed for automatic control of a wide variety of manufacturing processes such as paper manufacture, metals processing, chemical manufacturing and oil refining. Called the RW-300, it provides computational flexibility, precision and speed of a general purpose digital computer, which can not only record data but also interpret and manipulate it.

Among the functions it carries out are data interpretation; computing such as averaging, maximizing, solving equations, and interpolation; logical operations such as starting or shutting down a process unit; checking and alarm functions such as instrument checks, process stability and computer self checks. Data recording functions include process operation instruction and data logging in which it converts measurements of process instruments into digital numbers which are printed out to provide permanent records of process variables.

The computer and its associated input-output equipment have been designed with three physical objectives in mind—reliability, simplicity and adaptability.

It measures only 55 in. long by 29 in. wide. It is 36 in. high and weighs about 400 lb. *The Ramo-Wooldridge Corp.*

... for more details, circle No. 270 on postcard

## RUBBERIZED ABRASIVE BLOCKS

... cut diamond wheel dressing time by 90%

By the method that uses these Cratex rubberized abrasive blocks, you can do a fast, effective job of removing smear metal and clogging from metal bonded diamond wheels. Because of its cushioned action, the block is said to "flow" around the diamond particles, cleaning away the smear metal with minimum danger of knocking expensive diamond particles loose. The method quickly and easily restores a wheel to its maximum cutting action, at the same time increasing the wheel's life. *Cratex Mfg. Co.*

... for more details, circle No. 271 on postcard

## VARIABLE SPEED CONTROL

... operates d-c. gear motors from a-c.



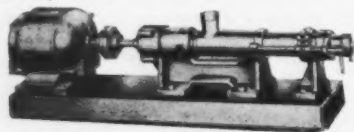
Dry disc-type selenium rectifiers and a variable voltage transformer are among the design features of a recently-developed variable speed control for operating d-c. gear motors from a-c. circuits. The motor has instant starting, since no warm-up time is required. A varying range of speeds, infinitely adjustable from basic top motor speed down, permits optimum starting and complete control throughout the working range. The control is available with reversing, jogging and dynamic braking. *Janette Electric Mfg. Co.*

... for more details, circle No. 272 on postcard

## With Moyno Pumps Material Is Moved!

Where you want it!  
When you want it!

**NO TYPE LIMITATIONS.** The Moyno principle knows no type limitations. Liquids, abrasives, solids in suspension—a Moyno pumps all with equal ease. There's only one moving part, a helical rotor turning in a double helical stator—no delicate vanes, no reciprocating parts, no valves. That's why a Moyno is always on the job where pumping was a problem.

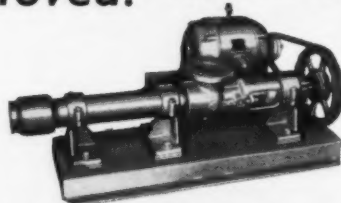


**HOW ABOUT YOU?** These amazing pumps have solved hundreds of tough pumping problems. If you're interested in good pumping, investigate the advantages Robbins & Myers Moyno Pumps have to offer. They'll stand up where other pumps fail, delivering positive pressures, without pulsation. There's a Moyno for every purpose. Chances are they're just what you're looking for. Why not inquire today?

Call "Fernholtz" First for Complete Information

## FERNHOLTZ MACHINERY CO.

8468-W Melrose Place  
LOS ANGELES 46, CALIFORNIA  
Telephone OLive 3-2360



...for more details, circle No. 114 on Reader Service Postcard

WESTERN INDUSTRY — September 1957

For more details, adv. opp. pg., circle No. 115 on Reader Service Postcard ➔



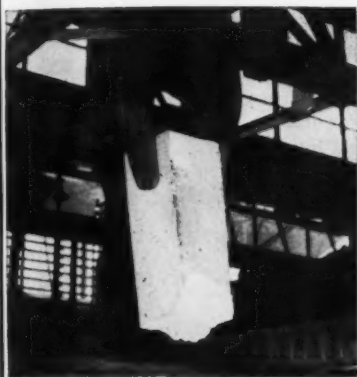
# EUTECTIC

## Welding News

PUBLISHED BY EUTECTIC WELDING ALLOYS CORPORATION, 40-40 172 STREET, FLUSHING 58, NEW YORK, N. Y.



### A BURNING QUESTION ONLY EUTECTIC COULD ANSWER



Overlays on the jaws of this "stripper" had to withstand temperatures up to 2600 F—often reached by the red-hot ingots it carries in a mid-western rolling mill. Repeated tests by the mill to find an alloy that would withstand these high temperatures resulted in failure. Conventional overlaying alloys were quickly burned off, and the frequent overlaying resulted in considerable expense, downtime and wasted labor. A Eutectic District Engineer was consulted. He recommended EutecBor #9, Eutectic's super-high alloy overlay, which has remarkable resistance to wear and

corrosion at normal and elevated temperatures.

Overlays of EutecBor #9 were applied at 1800 F. Conventional overlaying materials require 2400 F. Low application temperature avoided dilution, and super-hard EutecBor #9 deposits were not mixed with softer base metal. Overlays of EutecBor #9 showed no trace of pitting or galling. In fact, as deposited it had an RC hardness of 55-62, and an RC 36-37 at 1600 F...or sufficient hardness to withstand jet aircraft exhausts.

The mill reported that EutecBor #9 overlays gave them six times greater wear than conventional overlays. (B-10)

### NEW EUTECTRODE SOLVES JOINING PROBLEM



A sheet metal fabricator with orders for five 12-foot combustion blower and intake ducts found the cost of stamping component parts prohibitive. Ducts were of varying gages of steel, and required welding to different contours after plates were sheared.

Conventional electrodes repeatedly proved unsatisfactory, the best one giving 22 linear ft. of weld in 28 minutes for one pound...and not doing the job at that. At the recommendation of their Eutectic District Engineer, Eutectic's new Super-SteelTectic 110 was tested.

One pound of this alloy produced 31.33 linear feet of fine butt in 24 minutes...a production increase of 80%.

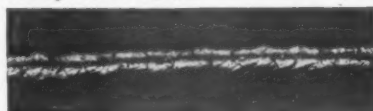
Super-SteelTectic 110 is extremely useful for repairing and overlaying many cast low-alloyed steels; and because penetration can be readily controlled it produces excellent results for joints of extremely different thicknesses, as example welding sheet metal to heavy frame members.

Super-SteelTectic 110 is now available as a universal, all position, AC-DC alloyed steel electrode designed to produce very high as-deposited physical properties in all positions. It deposits weld metal approaching 100,000 psi tensile, which is fully magnetic and machineable. Further detailed data on Super-SteelTectic 110 is available. (B-12)

EUTECTIC WAREHOUSE—SERVICE CENTER • 1108 BLAKE STREET, BERKELEY 2, CALIF.  
EUTECTIC WAREHOUSE—SERVICE CENTER • 1414 SOUTH STREET, PHOENIX, ARIZONA

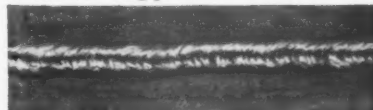
### WELD FAILURES ARE COMMON WITH CONVENTIONAL HIGH HEAT WELDING ALLOYS

A conventional high heat welding alloys produced this weld. Bead was difficult to start. Deposit is porous, slag was difficult to remove. Wide amperage and voltage fluctuation occurred, indicating poor weldability of electrode.



### EUTECTIC PRODUCES BETTER WELDS AT LOWER TEMPERATURES AND AMPERAGES

EutecTrode 680 produced this weld. Bead is even and smooth. Deposit is dense and free from porosities and cracks. Superior arc control and action prove highest weldability. "Amp-heat Input" remained constant during pass.



### YOU CAN SEE THE DIFFERENCE

Eutectic's patented, exclusive Low Heat Input® and Surface Alloying® metal joining processes make possible complete bonding between filler and base metals at temperatures far below fusion points of base metals. This avoids warping, distortion and stress invited by conventional high heat welding materials. (B-11)



Eutectic Warehouse—Service Centers  
1108 Blake Street, Berkeley 2, Calif.  
1414 South Street, Phoenix, Arizona

Eutectic Welding Alloys Corporation  
40-40 172nd Street, Flushing 58, N.Y.

Gentlemen:

I would like further free information on the following:

- ☐ B-10 ☐ B-11 ☐ B-12  
☐ Free 170 page pocket Welding Data Book.

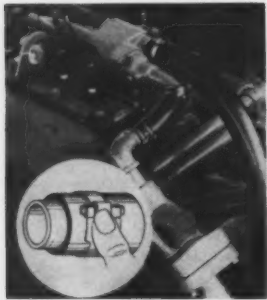
Name \_\_\_\_\_

Business Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

## HOSE OR TUBING CLAMP

... for diameters, contours from  $\frac{5}{8}$  to 7 in.



Simplicity and ease of application are features of this high tensile stainless steel clamp for a wide variety of applications on automotive, marine, industrial and appliance hoses. Furnished in flat form for use with plastic, neoprene and rubber hose or tubing, it's effective for all diameters and contours from  $\frac{5}{8}$  to 7 in. The Uni-Clamp

withstands pressures exceeding bursting point of hose or tubing for which it is designed. You install it by fitting the clamp around hose, hooking tongue around the flat key and rolling the key over with finger pressure only. No tools are needed to insure maximum desired tension, and pressure of clamp on hose is equal at all points. Uni-Clamp, Inc.

... for more details, circle No. 273 on postcard

## MANUAL MOTOR STARTER

... has easily-inserted plug-in heater



Developed for use with grinders, conveyors, hydraulic presses, etc., this manual motor starter for single-phase horsepower motors up to one 1 hp., has a unique plug-in heater that can be inserted in seconds into the front of the unit. Other features are a new terminal design to reduce wiring time, overload protection by a bi-metallic

thermal mechanism and wrap-around cover that lifts off for easy accessibility. Compact enough to fit any standard gem or handy box, the starter can be installed in the same mounting space used for the larger model it replaces. It comes in an indicating light form with a neon light in its cover, flush-mounted types, and combinations of a starter and hand-off-automatic selector switch or another starter. Enclosures include general purpose, dust and watertight, and explosion proof. General Electric Co.

... for more details, circle No. 274 on postcard

## 2 STAGE CONTROL OPERATION WITH 1 MERCOID PRESSURE CONTROL

AVAILABLE IN 17 PRESSURE RANGES FROM 0-30" VAC. TO 300-2500 PSI.

WITH THE SENSITIVITY YOUR APPLICATION REQUIRES



Mercoid DA-400 Series Pressure Controls are dual purpose controls, incorporating a single pressure element operating two separate, independently adjustable Mercoid magnetic switches. The switches may be used for multiple circuit control for various operations as the control responds to pressure changes.

AVAILABLE FOR FOLLOWING OPERATIONS:

SPECIFICATION No. 4122. One circuit opens on increase of pressure—second circuit opens on further increase of pressure.  
SPECIFICATION No. 4123. One circuit closes on increase of pressure—second circuit closes on further increase of pressure.  
SPECIFICATION No. 4132. Both circuits open at intermediate pressure. One circuit closes on increase of pressure above neutral zone—second circuit closes on decrease in pressure below neutral zone.  
SPECIFICATION No. 4123. Both circuits close at intermediate pressure. One circuit opens on increase of pressure above neutral zone—second circuit opens on decrease in pressure below neutral zone.

WRITE FOR BULLETIN NO. 92.

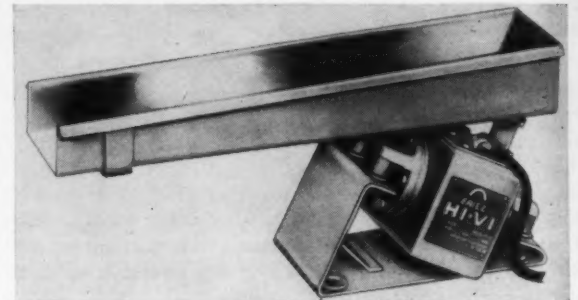
THE MERCROID CORPORATION

4901 BELMONT AVE., CHICAGO 41, ILLINOIS, U.S.A.

... for more details, circle No. 116 on Reader Service Postcard  
See Directory listing page 126

## MAGNETIC VIBRATORY FEEDERS

... with glass fiber springs



Greater output, higher broad-range efficiency and trouble-free performance are promised for this line of Hi-Vi electro-permanent magnetic vibratory feeders. A completely enclosed drive element protects against damage or contamination, and special disc-shaped springs of bonded glass fiber (instead of metallic leaf) are not subject to corrosion and packing, making for years of dependable, trouble-free performance. Rectangular-shaped trays produce uniform feed without front end flip or rear dead spots, also resulting in greater material capacity and smoother spread or flow. Instead of a rectifier, the drive system has a lifetime powered Alnico V magnet which gives an automatic magnetic rectification system. The feeders give accurate controlled feeding of bulk materials from ounces to tons per hour, and all types of materials—dry, hot, abrasive, lumpy—may be converted, spread, blended, dried or mixed in them. Eriez Manufacturing Co.

... for more details, circle No. 275 on postcard

## INDUSTRIAL PROPERTIES

Warehouses - Buildings - Lofts -  
Plants - Factory Sites—Appraisals



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Phone GILbert 1-1407

3018 Central Avenue  
PHOENIX, ARIZONA  
Phone AMherst 6-8445

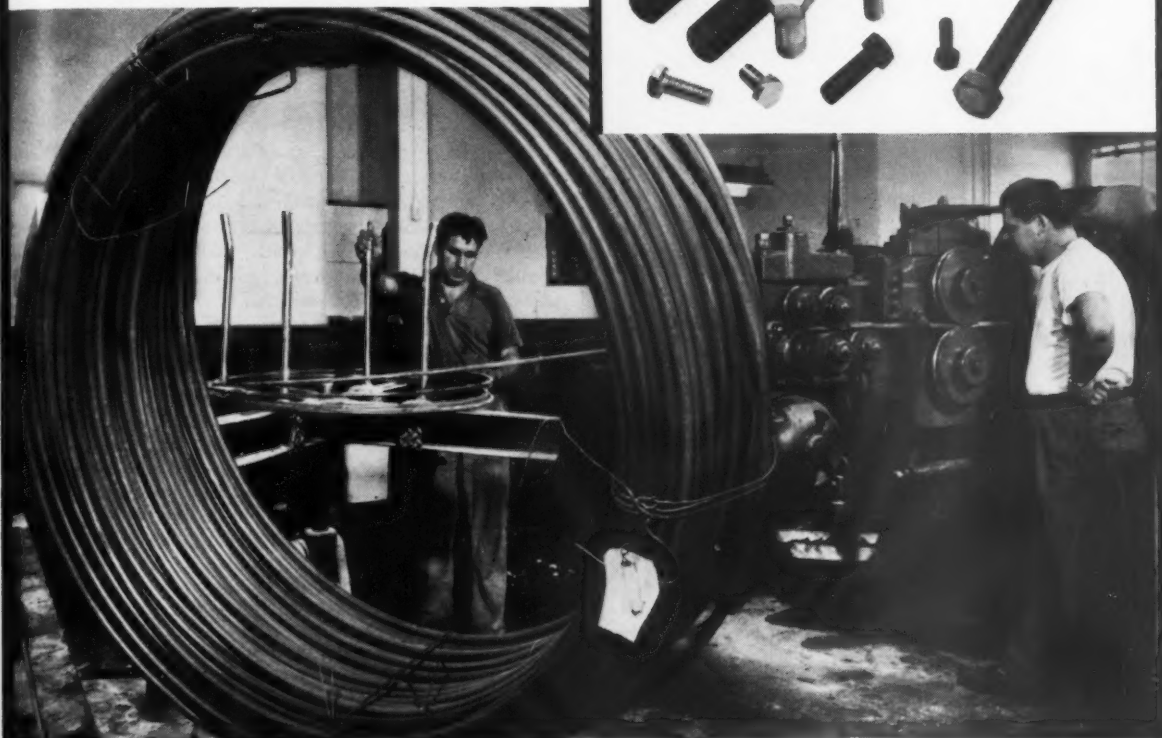
## SALES • LEASES

Complete Coverage  
Up-to-the-Minute Lists

... for more details, circle No. 117 on Reader Service Postcard

WESTERN INDUSTRY — September 1957

Russell Bolt Manufacturing Company, Los Angeles, is one of the West's largest suppliers of cold formed fasteners for the building and manufacturing industries. The bolts and screws displayed at right are but a few of many sizes, types, grades and finishes produced daily at Russell Bolt from USS Hot Rolled Rods (pickled, limed and drawn into wire).



## USS Rods are your best protection against rejects

When wire drawn from USS Rods enters Russell Bolt's new  $\frac{3}{4}$ " header (above), the slightest seam causes stock to split during the upset heading operation. This is easy to understand considering the terrific pounding wire undergoes on its way to becoming bolts. Russell Bolt uses USS Cold Heading Quality Hot Rolled Rods as their best protection against rejects caused by split heads. These USS Rods have been metallurgically "tailored" for the best cold heading performance.

Whatever your product, this "tailor-made" quality can help you reduce rejects, set production running smoothly and on schedule. One call to Columbia-Geneva will put the West's largest rod and wire-making facilities behind your problem. Rods and wire for every purpose from United States Steel.

### Free Wire Gauge! WI-9

UNITED STATES STEEL CORPORATION  
COLUMBIA-GENEVA STEEL DIVISION  
120 MONTGOMERY STREET  
SAN FRANCISCO 6, CALIFORNIA

Please send me your free wire gauge that's fast and simple to operate; gives accurate measurements.

Name

Address

City  State

USS Manufacturers Wire and Rods

UNITED STATES STEEL



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**IMMEDIATE DELIVERY**

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FOR BETTER AND SAFER FLUID TRANSMISSION

**TYGON FLEXIBLE PLASTIC TUBING**

in 58 different 1/16" to 2" I.D. and 1/8" to 2 1/2" O.D. sizes.

**TEST** . . . this crystal clear, tough, flexible tubing for food and beverages which resists acids, alkalis, oils, greases, water and alcohol . . . at no obligation to you.

**WRITE FOR FREE SAMPLES NOW!**  
A PRODUCT OF U.S. STONWARE CO., AKRON, OHIO

**RYAN HERCO PRODUCTS CORP.**  
1311 W. Magnolia Blvd. • Burbank, Calif. • Victoria 9-3686

...for more details, circle No. 119 on Reader Service Postcard

## PHASE-VOLTAGE CONVERTER

... single to three phase, sizes 500 to 2,500 w.



Suitable for testing, sound track and projection equipment, and other uses, this 39-lb. rotating converter changes single phase, 115 v., 60 cycle a-c to three-phase, 230 v., 60 cycle current. Made in five sizes, from 500 to 2,500 watts, the smallest model measures 12 x 10 x 8 1/2 in. It has an aluminum alloy frame housing the capacitor

starter and both output and input receptacles. Intake and exhaust air vents located in lower halves of endbells make the device drip proof, and heavy duty grease sealed ball bearings insure a quiet running machine. Kato Engineering Co.

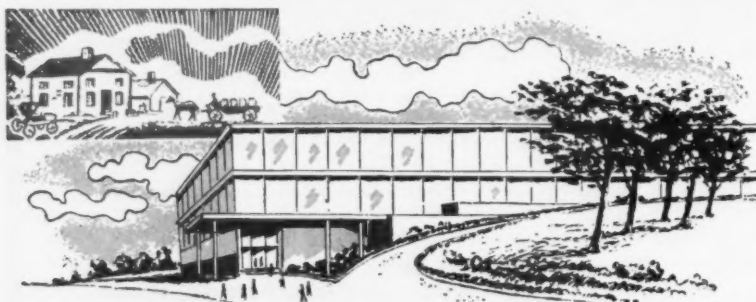
... for more details, circle No. 276 on postcard

## SWIVEL TRUCK CASTER

... pressed steel, with double ball race



Ease of swiveling and long caster life in two new series of truck swivel truck casters is provided by double ball races, with the upper race carrying the load and absorbing side thrust, while the lower race balances load and absorbs thrust. Made of lightweight



**WILL YOUR PUMPING BE MODERN TOO?**

When modernizing your plant and equipment, you can cut costs by installing positive displacement Viking Rotary Pumps. You can pump liquids ranging from LP-Gas to tar and molasses with self-priming Vikings. You can eliminate uncertain, troublesome gadgets, extra piping, auxiliary equipment, etc.

One Viking does your pumping from start to finish, requiring low horse power and delivering high efficiency.

Vikings have stood the test of time. Many have records of 10, 20, 30, and even 40 years with little or no maintenance. Over the years, Vikings have been improved to meet new problems and to give still better pumping service.

For the pumps that will save you money and modernize your pumping, specify Vikings. Ask for bulletin 57Sa today.



VIKING—the leader, not a follower, in Rotary Pumps



**VIKING PUMP COMPANY**

Cedar Falls, Iowa, U.S.A. In Canada, it's "ROTO-KING" pumps

See our Catalog in Sweet's Plant Engineers File.

...for more details, circle No. 120 on Reader Service Postcard

**MOTOR MICA**  
TRADE MARK REG. U. S. PAT. OFF.

**ANTI-FRICTION COMPOUND**

In White Powdered Form  
**Puts Muscles In Your Lubricants**



Solves Toughest Lubrication Problem



Works wonders when used with cutting oils. Simplifies deep drawing, metal stamping, milling, punch press work, etc. Prolongs life of dies. Eliminates sticking. Makes things operate smoother. Reduces friction and wear.

Write For Free Sample

**SCIENTIFIC LUBRICANTS CO.**

3469 N. Clark St.

Chicago 13, Ill.

...for more details, circle No. 121

WESTERN INDUSTRY — September 1957

pressed steel, the casters are available with wheel diameters of 2½, 3, 4, 5 and 6 in. Individual load capacities for the 52A series range from 85 through 600 lb., and in an alternate heavy-duty series, 52AH, up to 780 lb. Casters can be equipped with wheels of semi-steel, soft and hard solid rubber, vulcanized-on in various rubber compounds and Bondcelon plastic. *Bond Foundry & Machine Co.*

... for more details, circle No. 277 on postcard

### ADJUSTO-SLIDE MOTOR BASE

... easy belt take-up reduces down time



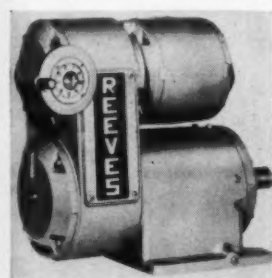
Lost production due to stretched and sagging belts may be virtually eliminated with this Adjusto-Slide motor base that permits belt take-up to be accomplished by adjusting only one screw. Replacement of belts is equally simple, for the adjusting screw on most models can be loosened and

swung aside, freeing top plate and motor to move far enough for replacement operation. Motor base sizes and mounting hole spacing accommodate NEMA frame sizes from 182 through 326 v. in both old and new designations, from 1 to 30 hp. *The American Pulley Co.*

... for more details, circle No. 278 on postcard

### VARI-SPEED MOTODRIVES

... two new sizes, wider speed ranges



Now available are two new sizes, 200 and 300, of Vari-Speed Motodrives, designed in two styles—C and Z flow—with several different models and reducers with increased capacity in single, double or triple stages. Flexible design of the units permits hundreds of combinations — space-saving, space-fitting stand-

ard assemblies to meet most installation needs. For 1 through 5 hp. applications, these new sizes have the handwheel control location that can be rotated to optional positions for greater convenience. Other features include new disc assemblies that permit wider output speed ranges; pre-loaded spring to maintain correct belt tension; close-grooving lubrication for free sliding discs, and new Metermatic system that automatically lubricates the motor and variable shaft bearings. *Reeves Pulley Co., Div. of Reliance Electric and Engineering Co.*

... for more details, circle No. 279 on postcard

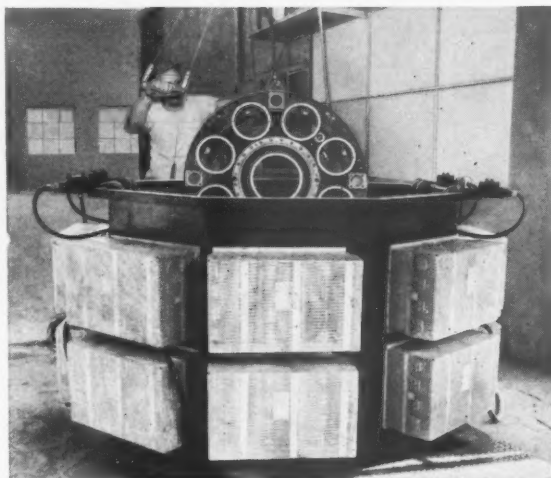
### MOUNTED GRINDING WHEELS

... in all standard shapes, sizes, gradings

Made of a stronger vitrified bond, known to the trade as V-40, these mounted grinding wheels just introduced are finished to precision running truth, important for delicate touch-up operations. They come in all industry standard shapes and sizes and in a complete range of gradings. Wheels can be supplied with hard, nickle-plated mandrels in a variety of sizes to fit various chucks. A special high-strength cement is used for anchoring the abrasive. The V-40 bond has exceptional strength and free-cutting qualities permitting extra-fast stock removal with minimum pressure. *Bonded Abrasives Div., The Carborundum Co.*

... for more details, circle No. 280 on postcard

## BENDIX-PACIFIC MODULAR DESIGN SONIC TRANSDUCERS for FULL-SCALE cleaning



### ADAPTABLE TO CONVEYORIZED OR STATIC PRODUCTION CLEANING APPLICATIONS



Sonic cleaning has "come of age". Already proven in industrial and military applications, Bendix-Pacific modular design sonic transducers offer maximum flexibility to meet any production requirement.

The installation shown is a 5' diameter, 500 gallon tank ... powered by a 50 KW motor generator. Used for all-purpose cleaning of Air Force jet engines, parts ranging from the smallest pump components to the largest structural members are thoroughly cleaned ... in minutes!

### BENDIX-PACIFIC SONIC EQUIPMENT ... A NEW TOOL FOR INDUSTRY

- Materials can be thoroughly cleaned of even the hardest contaminants in mild, cheap nonhazardous solutions
- Bendix-Pacific sonic equipment may be adapted to existing tanks to accommodate any size or shape of material
- Standard motor generators furnish unlimited power with minimum maintenance ... and maximum economy
- A system can be provided to meet your exact requirements
- For further information, contact the Industrial Sonic Equipment Department:



... for more details, circle No. 122 on Reader Service Postcard

## 50 YEARS GEAR SERVICE TO INDUSTRY

The More Particular You Are In  
Selecting Gears, The More Likely  
You Are To Select JOHNSON

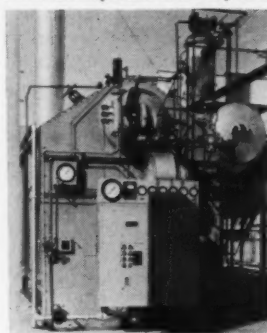
**JOHNSON GEAR  
AND MANUFACTURING CO.**

8th & PARKER STREETS  
BERKELEY 10, CALIFORNIA

...for more details, circle No. 123 on Reader Service Postcard  
See Directory listing page 123

## OIL AND GAS BURNER

... in 4,000 to 24,000 lb. per hr. range



Newest addition to the Fyr-Compak package burner series is this Model 57, for new or conversion boilers in the 4,000 to 24,000 lb. of steam per hour range. With same efficiency and wide (8-10 to 1) firing range of larger units, it features a compact, clean design, with all components behind full doors for complete accessibility. Available for semi- or fully-auto-

matic operation on gas, oil, or combination fuels, the unit is completely factory assembled and wired for simple boiler front mounting with only fuel, steam and electrical connections to be made in the field. Combination gas and oil unit shown here is firing a pressurized package boiler to 10,000 lb. per hr. Coen Company.

... for more details, circle No. 281 on postcard

## CORROSION-PROOF LINED PIPE

... complete with matching fittings

An answer to corrosion-contamination problems is offered with the development of Fluoroflex-T-S pipe, lined with a high density Teflon compound that is chemically inert at temperatures up to 500 deg. F. The pipe comes with matching fittings so that a complete system is available. Designed to handle any and all hot acids and caustics in applications where temperatures and pressures accel-

## Ask Standard

how floor-to-floor  
conveyors helped  
famous cookie and biscuit maker  
save manhours, space, handling ...



ROBERT A. Johnston Company, Milwaukee, Wisconsin, expects their Standard Conveyors to pay for themselves out of manhour savings. Initial operation showed the conveyors also cut breakage ... reduced floor area needed for handling by  $\frac{3}{4}$  ... virtually eliminated need for hand trucks.

It's another example of how Standard's half century of experience in conveyor application pays off.

If you need permanent or portable conveyors, it pays to contact STANDARD CONVEYOR COMPANY, General Office: North St. Paul 9, Minn. Sales and Service in Principal Cities.

Call the Standard engineer listed in your classified phone book, or write for Bulletin 309 — address Dept. H-9.



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Do you plan  
to **SELL**,  
**INCORPORATE**  
or **MERGE**?

Then you need a GENERAL APPRAISAL to provide an up-to-date, impartial valuation as the basis for an equitable transaction.

55 years of authoritative service



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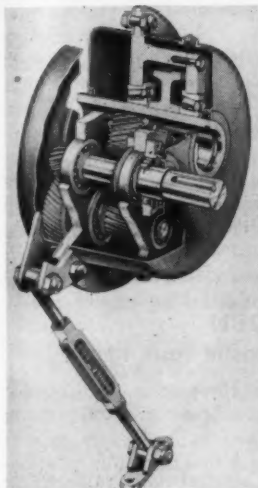


erate corrosion, the pipe assemblies are available in 1, 1½, 2, 3 and 4-in. sizes, with a 6-in. size to be made soon. Jacketed with schedule 40 seamless steel pipe with 150-lb. ASA flanges, the pipe liner is formed over the full gasket face of the flanges so that it becomes an integral one-piece gasket and liner. Both 45 and 90 deg. elbows are available with the same liner, and tees, crosses, and reducers are in final stages of development. *Resistoflex Corp.*

... for more details, circle No. 282 on postcard

## HIGH RATIO SHAFT-MOUNTED DRIVE

... with new, lower output speeds



A new higher ratio of 24 to 1 (or 20 to 1 in two smaller sizes) has been added to the Falk line of all-steel double reduction shaft-mounted drives. Practical advantages to the new units include use of smaller sheaves to obtain a given output speed and a saving in motor cost, when, because of lower output speed, a 1,750-rpm. motor can be used instead of a more expensive slower speed motor. Units are available for horizontal and vertical application, in ½ to 30 hp. ranges, with output speeds as low as 5 rpm. *The Falk Corp.*

... for more details, circle No. 283 on postcard

## Year in, year out DEPENDABILITY



—with

## BLACKMER rotary pumps

Cut maintenance costs and delays due to pump failures through these outstanding features:

- self-adjusting for wear vane construction
- replaceable vanes and liner
- self-priming with high suction lift
- wide range of applications



liquid materials handling®

# BLACKMER

Industrial, Hand and Truck Pumps, Strainers, Pressure Control Valves  
**BLACKMER PUMP COMPANY, GRAND RAPIDS 9, MICH.**

DIVISION SALES OFFICES — NEW YORK • ATLANTA • CHICAGO •  
GRAND RAPIDS • DALLAS • WASHINGTON • SAN FRANCISCO

See Yellow pages for your local sales representative

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**WESTERN INDUSTRY — September 1957**

## NOW, Speeds from 0 to 180" per minute

with new  
**VICTOR**  
PORTABLE  
Flame-cutting  
Machine  
MODEL VU-120



Model VU-120 weighs only 35 lbs. Main wheels run on ball bearings; casters swivel on ball bearings, run on oilite bearings, are shrouded as protection against slag.

**Operates at same speeds forward or reverse.**

**Cuts straight lines, circles, square or bevel kerfs.**

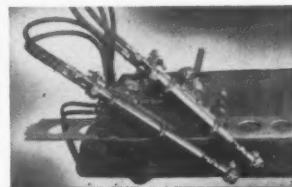
**Adaptable to many automatic welding applications.**

Now constant running motor and 3-position torque-converter transmission of new Model VU-120 bring you speeds from 0 to 180" per minute—forward and reverse—without loss of power at low speeds. In neutral position, machine free wheels so you can set up easily and quickly. Wide speed range enables you to adapt travel carriage to many automatic welding applications, using either submerged or inert arc.

You get remarkable accuracy from the Model VU-120. Floating rear caster practically eliminates side tilt and wobble. There's no "creeping"—shut off machine and it stops instantly.

Universal torch holder accommodates any model VICTOR machine cutting torch, with or without gear rack. Two torch holders can be used if desired. Case is pre-drilled for extra torch holder, side guide roller, or counterweight.

Try the fast-operating VU-120. Ask your VICTOR dealer for a demonstration on your job NOW... or write us for descriptive Bulletin 353.



Torches on Model VU-120 easily angled for bevel cuts. Machine accommodates both 2 or 3-hose torches, and in certain set-ups each holder can handle multiple torches.

FOR MAXIMUM  
EFFICIENCY AND SAFETY,  
USE GENUINE VICTOR  
TIPS AND PARTS

# VICTOR

for welding

## VICTOR EQUIPMENT COMPANY

Mfrs. of welding & cutting equipment; hardfacing rods, blasting nozzles; cobalt & tungsten castings; straightline and shape cutting machines.

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San Francisco 7

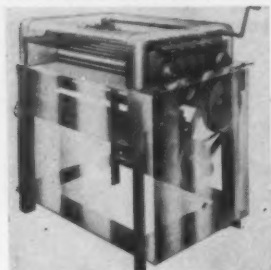
3821 Santa Fe Avenue  
Los Angeles 58

... for more details, circle No. 127 on Reader Service Postcard

157

## STRAIGHTENING MACHINE

... has 11 rolls, for soft materials and steel



Made with 11 rolls instead of the usual 9, this Benchmaster straightening machine is specially adapted to soft materials but will also supply additional straightening capacity for steel, if required. Both feed and discharge ends have pinch rolls and the machine can decoil steel stock in thicknesses from .010 to .200 in., depending on width, up to 48 in. Rolls are gear- instead of chain-driven, and the upper roll train has a cam-operated quick release. Two models available are one with a constant speed output of 60 sfm., the other with a variable speed drive producing a feed of 30 to 120 sfm. *Benchmaster Mfg. Co.*

... for more details, circle No. 284 on postcard

## SILICONE POLISHING CLOTH

... gives protective coating to glass, metals

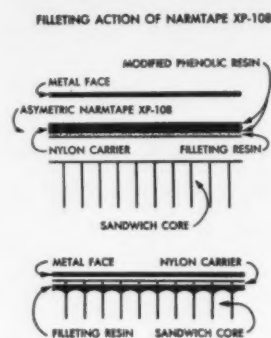


You can put a protective, odorless, non-oily coating to highly finished glass, plastic and metals with this non-woven rayon polishing cloth that is silicone treated. Used for wiping and polishing, it protects against fingerprints and the etching action of skin acids, dust, lint, mildly corrosive atmosphere and other deteriorating industrial wastes such as grit and moistures. Continued use imparts a water-repellant finish so smooth that future maintenance is much reduced. Perfect for reflectors, lenses, precision gages and tools, each cloth is 18 x 16 in. Sample 3-cloth package, \$1.00; 100-cloth unit packages for \$26.50 postpaid, lower prices on larger quantities. Warning: Your wife is apt to snatch one for home or car use! *Edmund Scientific Co.*

... for more details, circle No. 285 on postcard

## AIRCRAFT SANDWICH ADHESIVE

... eliminates need for core priming

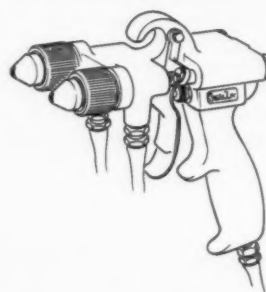


Designed to provide materially improved peel strength in aircraft and missile sandwich component fabrication and to eliminate need for core priming, this Narmtape XP-108 consists of a nylon carrier impregnated with a modified phenolic resin and overcoated on one surface with a highly mobile filleting resin. Addition of this resin cuts down fabrication time from previous methods in which the sandwich core was primed, then aired and oven-dried to obtain proper adhesive filleting action. In laboratory tests, the adhesive has also shown outstanding tensile shear and column compression properties, excellent flexural strength and resistance to corrosive materials. *Narmco Resin & Coatings Co.*

... for more details, circle No. 286 on postcard

## DUAL-NOZZLED SPRAY GUN

... no pre-mixing for plastic coatings



Pre-mixing and storage problems encountered in spraying plastic coatings can be eliminated with the use of this dual-nozzled spray gun. Using the gun and ingenious internal mix caps, the resin and chemicals which must be combined to create a plastic coating are mixed when they meet just in front of the surface to be sprayed.

The system does not require a qualified technician, is so simple an inexperienced operator can handle it. Resins, chemicals and gun, with standard pots, are supplied by the manufacturing firm. *Sealzit Co.*

... for more details, circle No. 287 on postcard

## WHY WRECK FLOORS TO ANCHOR MACHINERY?



Immediate Deliveries

Mounting on UNISORB speeds installation ... requires no bolts or lag screws or hole-drilling. A special cement binds the UNISORB pads to the machine feet and the floor. Permanent set absolutely prevents any riding.

UNISORB absorbs from 60% to 85% of transmitted vibration and noise. This results in substantial reduction of building and machinery repair, maintenance and replacement. This same noise and vibration absorption helps, moreover, toward lowered worker fatigue.

You can use UNISORB with equal effectiveness in anchoring light, medium and heavy machinery of almost every variety ... on any type of flooring.

Wherever you need secure, simple, trouble-free machine mounting, remember: UNISORB pays by saving all ways! Sample on request.



Look for the Red Line!

## TAYLOR FELT & SUPPLY COMPANY

Representatives and Distributors on the Pacific Slope for THE FELTERS COMPANY

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WESTERN INDUSTRY — September 1957



# THE INDUSTRIAL WEST ON ITS WAY

plants • production • distribution • personnel

## Standard Register Plans Huge Plant in Concord, Calif.

CONCORD, CALIF. — A multi-million dollar plant will be built by the Standard Register Co., on an 18-acre site south of Monument Blvd. in Concord-Diablo Industrial Park.

Plans call for an ultramodern, one-story building with some 250,000 sq. ft. of floor space. The plant will replace Pacific Division headquarters and plant facilities presently located in East Oakland.

Standard Register is one of the largest business form manufacturers in the U. S. The Pacific Division was formed in 1955.

## Westinghouse Begins Western Transformer Activity

LOS ANGELES — Westinghouse Electric Corp. has begun specialty transformer design and manufacture at 3627 Holdrege Ave.

Westinghouse will work with customers to produce transformers needed in the aviation and electronic industries.

## Garrett Supply Moves Into New Refrigerated Quarters

PHOENIX, ARIZ.—The only refrigerated tool and supply warehouse in the Southwest has been occupied by Garrett Supply Co. on 29th Drive and West Thomas Road, reported Edwin R. Castle, manager.

The 25,000-sq. ft. facility contains three 15-ton refrigeration units. Refrigeration, with provision to control dust and humidity, enables the firm to stock a large inventory for rapid off-the-shelf delivery without risk of deterioration.

A warehouse cooling system offers the advantage of safe storage for its stock of rubber belting, hose, tape and other articles seriously affected by heat.

## New Type Tinplate Plant Boosts Western Industry

OAKLAND, CALIF.—The growing importance of Western industry was emphasized as the American Can Company opened its largest (the West's first) plant to process tinplate from coils.

The new 60,000-sq. ft. facility—located next to Canco's Oakland can-making plant—will turn out upwards of 200,000 tons of processed can-making plate a year to package the expanding number of products produced in the West.

Another Canco-owned coil plant is scheduled to open soon in Los Angeles.

William C. Stolk, president of the American Can Co., pointed out that the Oakland coil plant marks the first step toward a new age of automation and integration in Western can-making. He said that, based on research and engineering studies now well under way, the processing of steel from coils will next be followed by production of cans direct from coils, without the intermediate stage of "sheeting," which involves the cutting up of coil-steel into rectangular shapes for the various sizes of cans.

As put into production, the Oakland coil plant automatically inspects, cuts and sorts sheets of tinplate and steelplate from coils weighing up to 15,000 lb. Each coil is roughly three miles in length. During processing, a broad ribbon of metal whirs almost soundlessly through close-linked machines at speeds up to 600 ft. a minute.

Each specially-designed production line is equipped with elaborate electronic inspection and control devices, with all operations monitored from a central console alongside the line.

Stolk pointed out that, formerly, steel mills performed these operations for Canco, at their cost plus a profit. Stolk said that Canco's program to install coil processing facilities, in Oakland and at other locations, is one means of combating continuing rises in the price of steel, in addition to launching the can-making industry into a new era of efficiency and economy insofar as manufacturing methods are concerned.

The next step in Canco's development program will be to incorporate equip-

ment into the coil lines for chemically-treating steelplate, he said.

Such a unit will be installed at the company's Hammond, Ind., coil-cut-

(continued on page 170)

## Ducommun Begins Construction of Phoenix Warehouse

PHOENIX, ARIZONA — Ducommun Metals & Supply Co. has begun construction on the new 66,000-sq. ft. office and warehouse facilities of its Arizona branch headquarters.

Located on a five-acre tract at 26th and Harrison streets, the new plant will represent an investment of more than \$1,000,000 in plant, inventory and equipment.

The plant will be stocked with substantial inventories of metals, tools, supplies necessary for a complete industrial distributing operation. Chester Cooper, Arizona Division manager, will continue to head Ducommun's expanding business in this area.

## Paper, Lumber Firms in Merger

TACOMA, WASH.—A merger has been reported between the St. Regis Paper Co. and St. Paul & Tacoma Lumber Company.

St. Paul & Tacoma Lumber Co. manufactures and distributes plywood and lumber. It operates a plywood mill in Olympia and a sawmill and dry kiln at Tacoma. St. Paul has fir and hemlock land about 40 miles east of St. Regis' kraft pulp mill on the western slopes of the Cascades.



## IT&T Launches Component Manufacturing Plant in Palo Alto, California

**PALO ALTO, CALIF.**—International Telephone and Telegraph Corp., Clifton, N. J., manufacturers of semi-conductor and other electronic components, have launched a new manufacturing operation here.

The plant will initially produce hermetic seals, and selenium and other semi-conductor type rectifiers for use in radio, television, industrial and aircraft applications. These will be followed by numerous new components being developed by IT&T.

The new Components Division is housed in a building at 815 South San

Antonio Road. The manufacturing area contains 8,000 sq. ft.

Frank M. Viles has been named vice president in charge of manufacture of semi-conductors; Frederick E. Stote, Jr., manager of manufacture of semi-conductors; and Robert M. Van Valkenburgh, plant manager.



## NOW—representing REVERE on ALUMINUM...



Everyone knows and respects the name of Revere... a leader in metals since 1801; an aluminum producer for 30 years.

Now, Ziegler Steel represents Revere offering a complete flat rolled metal service... STEEL and ALUMINUM... cut lengths and coils.

ZSS first handled aluminum 'way back in '46 when the silvery metal was almost a rarity. Chas. Adler, our Aluminum expert, offers 20 years' experience towards helping customers with the solution of aluminum problems.

## ZIEGLER STEEL SERVICE CORP.

LOS ANGELES 22, 7022 Bandini Blvd. • RAYmond 3-3131 • PARKview 8-1266

From San Diego, Santa Monica, Long Beach, Santa Ana, Pomona—Zenith 1266

NORTH HOLLYWOOD, 7400 Laurel Canyon Blvd. • POplar 5-8842 • STAnley 7-5606

OAKLAND 21, 727-66th Avenue • LOckhaven 2-2133

From San Francisco, San Jose and the Peninsula—Enterprise 11037

## W. P. Fuller Co. Opens New Lab in S. San Francisco

**SOUTH SAN FRANCISCO**—An ultramodern scientific workshop devoted primarily to research and development of new products was opened recently by W. P. Fuller & Co., paint manufacturers.

The \$500,000 facility will serve as research headquarters for three other Fuller laboratories maintained in the West. It is located just outside the main gate of Fuller's factory near the Bay.

Manager of the laboratory is Dale E. Callis. A. P. Pahl, director of laboratories and research for the company, heads a force of more than 100 chemists. Research projects cover a wide range of products, including house paints, aircraft and marine finishes and can coatings.

## Johns-Manville Stockton Plant Underway

**STOCKTON, CALIF.**—The Johns-Manville multi-million dollar plant commenced operations recently as one pipe machine started to work. By late October the plant will be in full production with three machines operating.

Dedication of the new plant is planned in November. August Schilling is plant manager.

## Nestle Chocolate Plans Huge Plant

**SALINAS, CALIF.**—The Nestle Co. plans to build a \$5,000,000 chocolate factory south of Abbott Street, between Growers Container Corp. and Blanco Road.

The plant will employ between 200 and 300 persons. Construction is expected to begin early in 1958 for the four-story building which will cover four acres of land.

## New Knopp Building Quadruples Productivity

**OAKLAND, CALIF.**—A new plant with four times the productive capacity of the old has been occupied by Knopp Inc. The new location is at 1307 66th St.

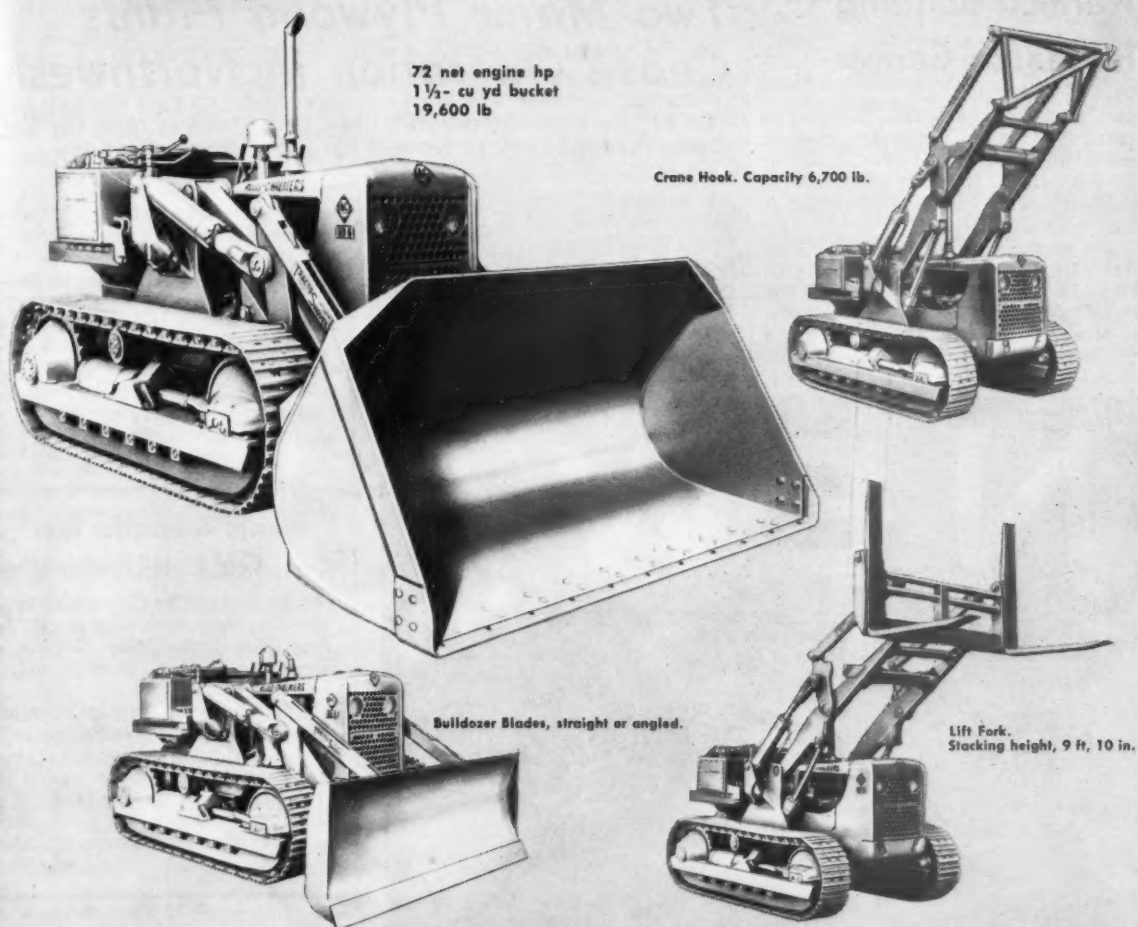
Knopp Inc. is a manufacturer of high precision electrical testing devices and laboratory apparatus.

## Paper Box Corp. Moves Into Vernon

**VERNON, CALIF.**—Imperial Paper Box Corp. of Brooklyn, N. Y., is moving into a new 16,000-sq. ft. manufacturing plant at 4801 Pacific Blvd.

Imperial manufactures record album covers for Columbia, RCA, Decca and Capitol Records.

...for more details, circle No. 129 on Reader Service Postcard



## HERE'S THE KEY TO OUTDOOR STORAGE

Flotation, balance and stability for all ground conditions; traction and power for heavy work; mobility and flexibility for handling many types of material — these advantages offered by the Allis-Chalmers HD-6G tractor shovel become increasingly important as the *trend toward outdoor storage gains momentum*.

With 72 net engine hp and long tracks, the HD-6G goes to work even before storage operations start. It clears and levels new areas; excavates, loads or spreads gravel and other surfacing material using a bucket or interchangeable dozer blade.

In the storage yard, the HD-6G stockpiles bulk materials, feeds hoppers and conveyors using a dozer blade, a 1 1/2-yd standard bucket or a

2 1/4-yd light materials bucket. It can also stack palletized material to a height of 9 ft, 10 in. with a lift fork attachment and handle heavy castings with a crane hook. All attachments are quickly interchangeable.

In winter it's "business as usual" when the HD-6G tractor shovel is on the job. This crawler tractor easily clears or loads deep snow.

Take advantage of the latest developments in all-weather preservatives and packaging with this efficient, all-weather material handler. Let your Allis-Chalmers dealer show you how the HD-6G tractor shovel can be your key to efficient outdoor storage. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

# ALLIS-CHALMERS

## Engineering in Action

## Narmco Building Research Center

SAN DIEGO—Narmco, Inc., has begun construction of a \$1,000,000 research center for research and development of its products in the field of structural adhesives, reinforced plastics and sandwich type structures.

The facility will be located at 8125 Aero Drive in San Diego's Research Park District on Kearny Mesa. The three-unit laboratory is located on a 10-acre site. Completion is scheduled for December of this year.

## Two Major Plywood Plants Cease Operation in Northwest

SEATTLE—The Aberdeen Plywood Co., Aberdeen, and the United States Plywood Corp. at Kosmos have shut down operations.

The Aberdeen Co. said that its closure was caused by "depressed market conditions"—a reference to a recent drop in the index price of plywood. No plans have been announced as to whether the company would stay in business or liquidate.

About 260 workers will be laid off.

A growing shortage of timber suitable

for peeling at the Kosmos plant, plus complications of providing a flow of logs for other plants are the principal reasons listed for the closing of the United States Plywood Corp. plant at Kosmos.

The plant, employing about 25, has been in operation since 1945. The Kosmos manager, *Harry R. Mahoney*, will be transferred to Roseburg, Ore., as an executive of the plant being built there. Much of the Kosmos equipment will be shipped to Roseburg.

## Jones & Laughlin Buys Cold Metal Products

LOS ANGELES—The Cold Metal Products Co., Youngstown, Ohio, will become the Strip Steel division of Jones & Laughlin Steel Corp., of Pittsburgh, Pa.

Affected in the transfer of assets will be the Cold Metal Products Co. of Calif. Though primarily a specialty metal warehouse operation, Cold Metal Products Co. of Calif. does some production of cold rolled strip in low carbon, high carbon and alloy grades.

## Southwest Airmotive Sells Bendix Line

DENVER, COLO.—Southwest Airmotive Co., E. 39th Ave. and Ulster St., has been appointed distributor for the Red Bank division of the Bendix Aviation Corp.

The Red Bank line, which will be stocked and distributed in Colorado, Utah and Wyoming, consists of generators, inverters, regulators, relays and other electrical equipment.

## New Globe Hoist Dealer

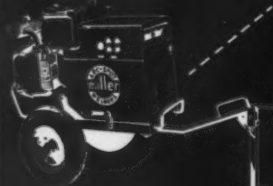
SOUTH PASADENA, CALIF.—The Blair-Martin Co. of 1010 Fair Oaks, has been selected as a dealer for the full Globe Hoist Co. industrial line. Equipment for sale includes dock ramps, platform lifts, and hydraulic cylinders.

## Alaska Birch Mill to Begin Operations

TALKEETNA, ALASKA—The Smith Hardwood Co. of Longview, Wash., is planning to build a \$200,000 mill here and send out the first shipment of lumber before winter.

*L. R. Smith*, owner, said that the mill plans to ship out over a million board feet a year.

# NEW!



Now equipped with a new and larger Onan 12.9 hp engine, the new Miller AEA-200-L produces a full 225 amperes of continuous rated, high cycle welding current or, 5 KW of 110/220 ac power for operation of power tools, lights, milking machines, etc., or, 1 KW of dc power.

Contractors, job welders, farmers and many industries have shown a continuing high regard for the AEA's weatherproof ruggedness, easy portability and instant changeover versatility from ac welder to power plant to pipe thawer.

Readi-pull starter, rubber tire running gear and road trailer available as optional equipment.

Complete specifications sent on request.

"... if it's Miller you know it's the finest ..."

**Miller** Electric Manufacturing Company, Inc.  
APPLETON, WISCONSIN

distributed in Canada by CANADIAN LIQUID AIR CO., LTD., Montreal

... for more details, circle No. 131 on Reader Service Postcard



## Maltby Purchases P&L Transmission

ANAHEIM, CALIF.—The Edward D. Maltby Co., Inc., sales representative and distributor of bearings and power transmission equipment, has purchased the P and L Transmission Co., at 1520 Lincoln.

The purchased firm will be known as P and L Transmission division of the Edward D. Maltby Co. Maltby's P and L division, in addition to stocking bearings and power transmission equipment distributed by the parent company in the Anaheim area, will also do general machining and fabrication of materials handling equipment such as conveyors and elevators.

Former owner Mike Halett will remain as manager of the new division.

## Pacific Industries Combines Operations

SAN FRANCISCO—Two of the operating divisions of Pacific Industries have been combined into one organization, reported Donald D. Smith, president.

The new division will be known as the Custom-Aire Products division and will manufacture wall and console gas heaters formerly made by the San Carlos plant (which will continue to operate as Plant II) and the forced-air gas heaters produced by the Heating Equipment Manufacturing division. The operations will be combined in the plant at 600 Indiana Ave. John M. Baeza will be general manager.

## Yuba Milling Names Western Distributor

LA PUENTE, CALIF.—The E. W. Smith Co. has been named exclusive Western distributor for the glass barytes of the Yuba Milling Division of Metals Disintegrating Co., Inc.

Yuba Milling Division has developed a source of a uniform grade of barytes—high in barium sulphate and low in iron content. Ample stocks are maintained in the Yuba plant in Emeryville, Calif.

## Arro Bolt Representative

SAN FRANCISCO—Arro Expansion Bolt Co. of Marion, Ohio, announces the appointment of the Eric F. Chemnitz Co. as sales representatives in Northern California, Nevada and Arizona.

## New Computer- Measurements Rep

SEATTLE, WASH.—The A. H. Martilla Co. has been named sales representatives for Computer-Measurements Corp. in Washington, Oregon and Idaho. Martilla, headquartered at the King County Airport, operates under the trade style of "Ahmco Sales."

## Lockheed Aircraft to Close Bakersfield Plant

BAKERSFIELD, CALIF.—The sub-assembly plant of Lockheed Aircraft Corp. will be closed before the end of the year and remaining work will be transferred to Burbank and Maywood, Calif.

Fulfillment of transport plane orders and a reduction in other airplane building was given as the reason for closing the Bakersfield plant.

## Tri-State Expands

LOS ANGELES—Tri-State Supply Corp., 544 South San Pedro St., has added 9,000 sq. ft. of warehouse facilities, according to C. F. Bowers, president.

## Mail-Well Envelope Plant

PORTLAND, ORE.—The Mail-Well Envelope Co. will build a new \$500,000 plant in the Kellogg Park Area on property acquired recently. The building will contain 75,000 sq. ft.

## Tektronix Production Plant

PORTLAND, ORE.—A new production plant containing about 100,000 sq. ft. is under construction by Tektronix, Inc., in the Beaverton Industrial Tract.

## Simpson Warehouse

SHELTON, WASH.—A 58,000-sq. ft. warehouse to store finished products will be built at the insulating board plant of Simpson Logging Co. The facility will hold 12,000,000 feet of insulating products.

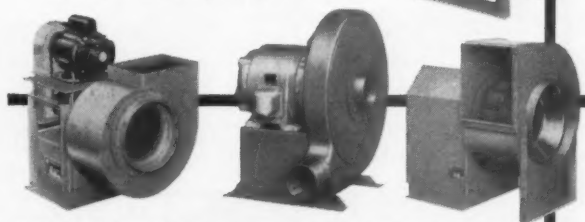


The appearance of Blowers can be misleading, too!

## ONE BLOWER MAY LOOK LIKE ANOTHER BUT YOU CAN DEPEND ON THIS ABOUT MASTER FAN CORPORATION'S BLOWERS:

They are never built DOWN  
to a price but always UP to a standard!

When you need dependable,  
efficient air moving equipment—com-  
mercial or industrial, call MASTER first!



Designers and Manufacturers of: Blowers (forward and backward curve) Air-  
washers, Fume Separators, Air Scrubbers,  
Spray Booth Fans, Mill Exhausters, High  
Pressure Blowers, Induced-draft Blowers,  
Ventilating Sets, Cabinet Units.

**MASTER FAN CORP.**  
1323 Channing St. Los Angeles 21, Calif.  
VAndyke 1037

Write for descriptive literature. If  
you have specific requirement, men-  
tion it for proper attention. Material  
will be sent to you immediately.

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## POWER TRANSMISSION SPECIALISTS

The Power Transmission Equipment Company and its representatives are, as the name implies, specialists in the vast and important field of Power Transmission. Over 75 years of technical and practical experience is available to you. Our stocks, sales efforts, and a complete gear and machine shop are available along with our service of "10,000 Minutes A Week." We will welcome your inquiries with prompt, courteous service from our two West Coast stores.

### Representing:

DIAMOND CHAIN CO.  
Roller & Conveyor Chains  
Stock & Made-To-Order Sprockets  
"Flexible Couplings"  
Oil Field Chains

DODGE MANUFACTURING CO.  
"Taperlock" Sheaves & Sprockets  
Dodge-Timken Pillow Blocks  
Rolling Grip & Diamond D Clutches

DAYTON RUBBER CO.  
"Cog" & Thorobred "V" Belts  
F.H.P. & Variable "V" Belts  
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Detachable & Pintle Malleable Chains  
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RAMSEY CHAIN CO.  
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LO. 4-2551

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Bakersfield, Calif.  
FAirview 5-8601

... for more details, circle No. 133

## Instrumentation showcase on wheels



**30,000 MILES EXHIBIT**—Consolidated Electrodynamics Corp., Pasadena, Calif., uses a 17-ton truck-trailer unit as a showcase on wheels. Among new equipment featured in this working exhibit is the company's recorder/reproducer, a magnetic-tape system for use in guided missile and aircraft-development tests. Other products include a high-temperature oscillograph, and the company's newest transducers, miniature connectors, and portable test instruments. The exhibit will visit major industries and aircraft installations in the United States and Canada.

## Garrett Supply Stocks Putnam End Mills

LOS ANGELES—Putnam high-speed end mills—a line specifically designed for machining of aluminum alloys—are now available to Southern California industry from stocks of the Garrett Supply Co., 3844 S. Santa Fe Ave. Putnam's new design features end

mills with a high helix, a thin web, and a high polish finish. The high helix and thin web combine for an easy chip disposal. This pulls the chips away from the work and throws them out where they can cause no trouble in the cutting action or pack down around the work to cause dulling.

### Faultless



Casters

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**SUPPLY**  
**COMPANY**

... for more details, circle No. 134

## X-ray Diffraction School Draws Production Men

SAN FRANCISCO—Over 100 production leaders interested in X-ray diffraction have enrolled in a special school conducted by the instruments division of Philips Electronics, Inc.

The school, slated for September 23-27 at the Sir Francis Drake Hotel, will cover all phases of X-ray diffraction.

## New Fort Worth Distributors

FORT WORTH, TEXAS—The Fort Worth Steel and Machinery Co. has named the following new distributors in the West: McDonald Mill Supply Co., El Centro, Calif., and Bearing and Power Transmission Co., Grand Junction, Colo.

## Foucar, Ray & Simon Announce New Tubing

SAN FRANCISCO—Foucar, Ray & Simon, now celebrating their 50th anniversary, announce the availability of seamless carbon tubing in heavier than 1-in. wall—widely used in making rollers, bearings, numerous machine parts and a wide variety of other work.

The company pointed out that while tubing of 1-in. wall is common, the supply of heavier than 1-in. wall has been in short supply, at least in the West. Request for heavier than 1-in. wall have been many and now Foucar, Ray & Simon has a supply (from 3½ to 8 OD) for immediate delivery.

## AEC Issues License No. 1

VALLECITOS, CALIF.—The Atomic Energy Commission has issued development power reactor license No. 1 to the General Electric Co. for operation of its power reactor.

The California facility will operate as a power reactor for the production of electricity. Steam produced in the reactor will be furnished to a turbine generator owned and operated at the site by the Pacific Gas and Electric Co. Electricity produced will be fed into the PG&E transmission system.

## Consol. Electrodynamics Starts Instrument Div.

PASADENA, CALIF.—Consolidated Electrodynamics Corp. has established an Analytical and Control Instrument division.

Harold F. Wiley, director of the company's Technical Services Dept. the past four years, has been appointed director of the new division, which will consolidate activities in design and manufacture of analytical and control electronic instruments.

## Merit Products Move

LOS ANGELES—Merit Products, Inc., makers of Sand-O-Flex and Grind-O-Flex, has moved to 3691 Lenawee.

Crescent



Wrenches

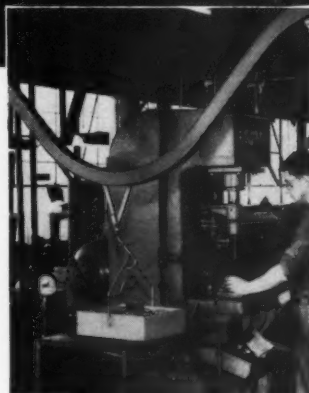
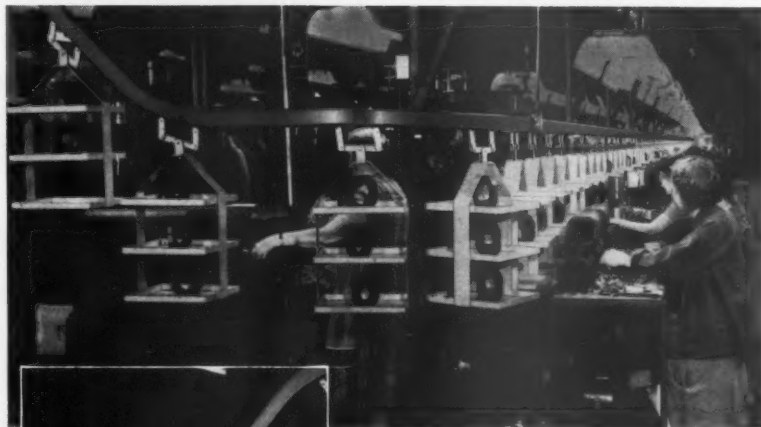
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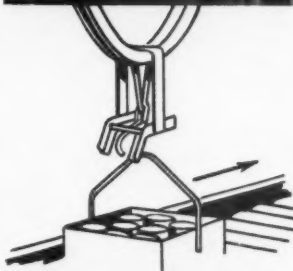
WESTERN INDUSTRY — September 1957

# R-W "Zig-Zag" CONVEYORS

provide real real AUTOMATION for  
COST-SAVING OPERATION & INCREASED PRODUCTION



The above photos illustrate how various materials handling problems on the machining and assembly lines were effectively solved, for an electric motor manufacturer, with R-W "Zig-Zag" Conveyors. "Stuffing-Trays" carry a continuous supply of work to assemblers seated on both sides of a huge bench and just as easily carry the finished assemblies on to other operations in the plant. This "Zig-Zag" system utilizes available overhead space to increase production efficiency and provides for a saving of valuable floor space. R-W "Zig-Zag" Conveyors are flexible, easy to install, easy to alter or expand, economical to operate and offer longer, safer, more efficient materials handling service on any production line.



The above photo and line drawing demonstrate how the R-W "Zig-Zag" Conveyor automatically picks-up full trays and automatically deposits them at the unloading station. Machine operator starts cycle by merely sliding full trays into the conveyor path.

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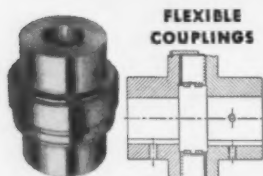
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# Lovejoy

## POWER TRANSMISSION EQUIPMENT

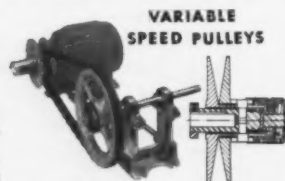
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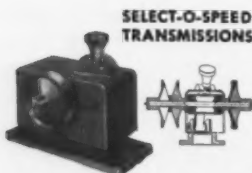
**FLEXIBLE COUPLINGS**  
Bores (max.)..... $\frac{3}{4}$ " to  $9\frac{1}{2}$ "  
O.D. ....  $\frac{3}{8}$ " to  $21\frac{1}{2}$ "  
Wt. ....  $\frac{1}{2}$  oz. to 1500 lb.  
H.P. .... 1/20 to 3000  
Torque (static).  $1\frac{1}{2}$  to 5100 ft.-lbs.

BULLESTIN  
C56  
REQUEST

BULLESTIN  
118  
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**VARIABLE SPEED PULLEYS**  
Bores (max.)..... $\frac{1}{2}$ " to  $1\frac{1}{2}$ "  
O.D. .... 3" to  $13\frac{3}{4}$ "  
Belt Sizes.....A to  $2\frac{3}{4}$  TW  
Speed Ratios.....1-1 to 8-1  
H.P. (1750 rpm.)..... $\frac{1}{4}$  to 15



**SELECT-O-SPEED TRANSMISSIONS**  
Controls....Lever or Hand Wheel  
Belt Sizes.....A to C  
Speed Ratios.....1-1 to 10-1  
H.P. (1750 rpm.)..... $\frac{1}{2}$  to  $7\frac{1}{2}$

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**UNIVERSAL JOINTS**  
Bores..... $\frac{1}{4}$ " to 2"  
Hub Dia. ....  $\frac{1}{2}$ " to 4"  
Static Torque  
340 to 130700 in.-lbs.  
H.P. (100 rpm.)..... $\frac{1}{2}$  to 207

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OREGON: Portland—1730 N.W. 25th

WASHINGTON: Seattle—822 First Avenue

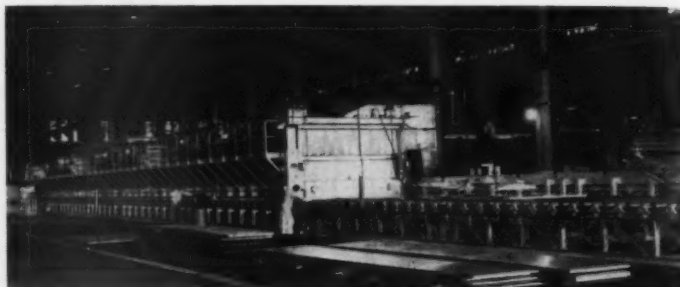
**LOVEJOY FLEXIBLE COUPLING CO.**

4892 WEST LAKE STREET • CHICAGO 44, ILLINOIS

...for more details, circle No. 137

See Directory listing page 125

## New continuous heat treat furnace



**LARGE ALUMINUM ALLOY PLATE** is heat treated in this new \$500,000 furnace at Kaiser Aluminum & Chemical Corp.'s Trentwood, Wash., rolling mill. Plate up to 5 inches thick, 110 inches wide and 50 ft. long can be processed in the 400-ft. long electric furnace.

### Ramo-Wooldrige Completing Center

LOS ANGELES—Another divisional building has been completed at Ramo-Wooldrige Corp. modern research and development center at Aviation and El Segundo Blvds.

This is a two-story, 105,000-sq. ft. facility. The 100,000-sq. ft. administration building is scheduled for completion early next year. Upon completion in 1959, the modern research and development center will consist of eight major structures enclosing some 800,000 sq. ft. on a 41-acre site.

### Water Meter Facility

LONG BEACH, CALIF.—Badger Manufacturing Co. of Milwaukee, manufacturer of water meters, will build a \$150,000 plant in the Rancho San Pedro Industrial Area. The facility will be located on an acre-and-a-half site at Susana Rd. near the Long Beach freeway.

### Bonewitz Chemicals Warehouse

MANTECA, CALIF.—Bonewitz Chemicals, Inc., is building a new \$20,000 plant warehouse. E. H. Fulte is manager.

### Razor-Back



Shovels

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**WESTERN INDUSTRY — September 1957**

## Screw Machine Products Industry In West Outpaces Rest of U.S.

**SAN FRANCISCO**—The Western screw machine products industry is growing faster than the industry in other parts of the United States.

This report was made by the National Screw Machine Products Association, Cleveland, following a Western tour by NSMPA president, Dana Jefferson, and executive vice president, Orrin B. Wernitz.

According to the report, a comparison growth percentage over the past seven years indicates that the number of Western screw machine products concerns has increased 89%, against a national average increase of 49%.

Jefferson and Wernitz note that employment ratios also show greater percentage gains. In the West, screw machine products employment has increased 138%, against a national average increase of 23%. Accordingly, Western employment now accounts for 8% of the national total from a previous figure of 4%. At the same time, the average size of companies has increased from 12 to 16 employees.

The report concludes that business prospects for the West's segment of the screw machine products industry are holding up better than the national av-

erage, even though a slightly lower volume is anticipated during the late summer and early fall.

Nevertheless, as an indication of the status now enjoyed by Western producers, four companies presently rank in the first 50 in the industry in employment.

## \* Culver City Industrial Center

**CULVER CITY, CALIF.**—The Eastham-Hays Industrial Center—a \$2,500,000 project—is offering 160,000 sq. ft. for new building and 100,000 sq. ft. of parking area.

The Center is located at Eastham Drive and Hays, in the Hayden Tract.

## Portland Office for Bristol

**PORTLAND, ORE.**—The Bristol Co. of Waterbury, Conn., has opened a sales office at 2210 N.W. Roosevelt Ave. *Lyle R. Koroach* has been appointed sales engineer for the territory.

## Mercer Steel Plans Branch at Eugene

**EUGENE, ORE.**—Mercer Steel Co. has leased 45,000 sq. ft. of land at Cleveland and Cross Sts. for the opening of a concrete reinforcing bar fabrication plant to serve the lower Willamette Valley and Southern Oregon.

*Edward J. Krieger*, who has been with Mercer for nine years and is a former resident of Eugene, will manage the new branch.

## Rucker Adds Floor Space

**OAKLAND, CALIF.**—An additional 7,200 sq. ft. has been added to the manufacturing space at the Rucker Co.'s plant at 4700 San Pablo Ave., bringing total area to 38,000 sq. ft. Rucker manufactures and fabricates large hydraulic and pneumatic fluid power systems.

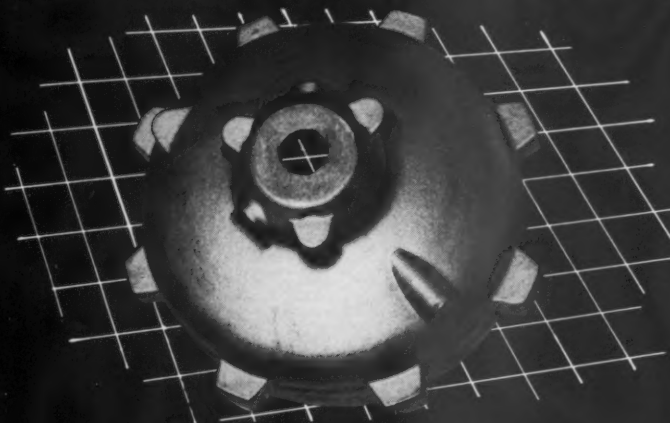
## Tidland Machine Move

**CAMAS, WASH.**—To accommodate its expanding operation, Tidland Machine Co. will move into a new 20,000-sq. ft. factory and office at 2363 S.E. 8th Ave. Tidland manufactures paper mill equipment and leaf and lug-type pneumatic shafts.

## Flinkote Expansion

**SAN LEANDRO, CALIF.**—Pioneer-Flintkote plans for a \$550,000 expansion of its plant at 2000 First Ave. A total of \$75,000 sq. ft. will be added, said *W. A. Kinney*, local manager.

GET THESE **5** DAYTON  
**PLUS FACTORS**  
WHEN YOU BUY IRON CASTINGS



CASIRON SORBOCAST

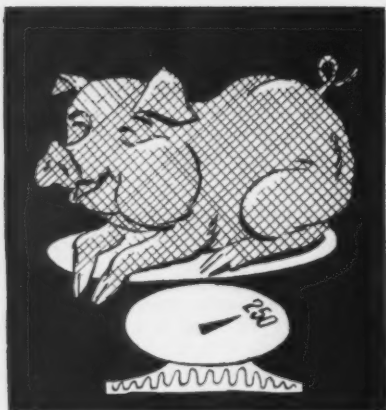
- 1 Full cooperation in pattern design and manufacture of your product.
- 2 Competent assistance with product engineering design.
- 3 Solutions of Metallurgical problems.
- 4 Lowering of end production costs.
- 5 Deliveries of Castings to meet your schedules.

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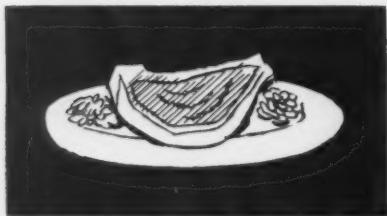
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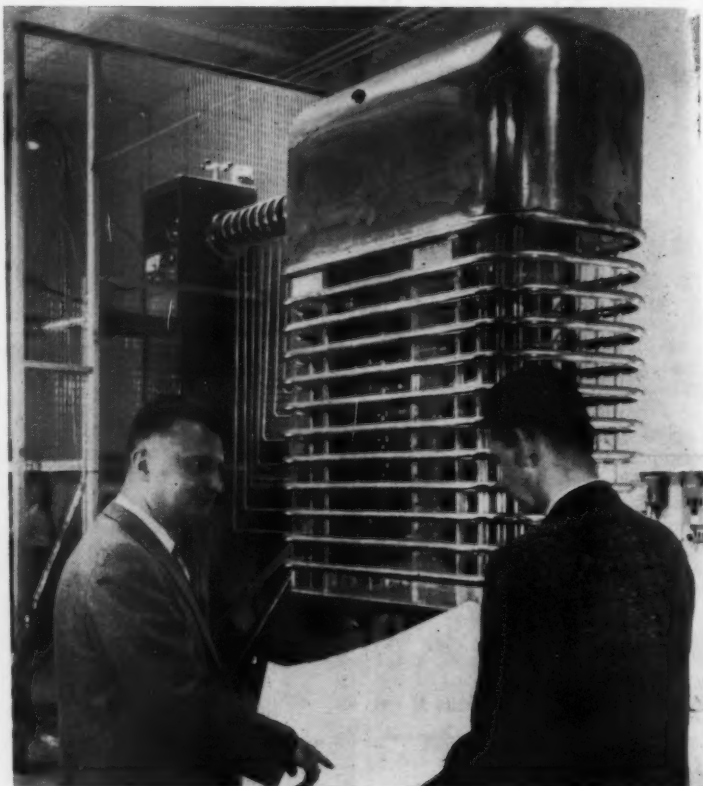
All sizes and types of Cleveland Vibrators are available. Our competent engineers will be glad to assist in making recommendations on the use of Cleveland Vibrators at your plant.



2914 Clinton Avenue • Cleveland 13, Ohio  
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...for more details, circle No. 141

T68

## Another first for the West



THIS COCKROFT-WALTON ACCELERATOR, manufactured by Applied Radiation Corp. in Walnut Creek, Calif., is the first commercial unit of its kind produced in the U. S. The 350,000 volt, 400 microampere positive ion accelerator will be used to generate neutrons for research in nuclear chemistry and physics. Pictured at left is **D. W. Garbellano**, ARCO vice president, and **R. C. Marker**, ARCO chief engineer.

### Hoffman Establishes New Department

LOS ANGELES—A new department, the Electro-Mechanical, has been established by Hoffman Laboratories.

The E-M Department (Plant No. 7) is located at 2621 South Hill St., within a short distance of Hoffman's other elec-

tronic facilities. The 16,000-sq. ft. facility will be used for design, engineering and production of complex electro-mechanical systems. *Lawrence Mendelsohn* has been appointed as head of the new facility.

### Packard-Bell Missile Section

SANTA MONICA, CALIF.—Packard-Bell Electronics Corp. has established a missile equipment section in a 21,000-sq. ft. facility at 2341 Michigan Ave. *Don Domike* has been named project engineer for engineers and manufacturing personnel in the new section.

### Gaines Company Adds Facilities

RIVERA, CALIF.—The Gaines Company, 7803 Industry Ave., has added a complete tool and die shop and production machine shop to its light metals foundry.

New departments of the foundry occupy 7,000 sq. ft. of the plant's 25,000 sq. ft. and are staffed by 20 employees. Over \$50,000 in equipment was added to machine castings, housings, hydraulic parts, control brackets and other types of castings used by the aircraft industry.

WISE-GRIP



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...for more details, circle No. 143

## Ft. Worth, Adam-Hill In Ground Breaking

SOUTH SAN FRANCISCO—Ground breaking ceremonies for new warehouse and office facilities for Fort Worth Steel and Machinery Co., manufacturer of power transmission machinery and bulk material handling equipment, and Adam-Hill Co., distributor of industrial equipment, were held here recently.

The new facilities will be located in the South San Francisco industrial park, located north of San Francisco Airport and adjacent to the Bayshore Freeway.

## General Dynamics Gets AEC License

SAN DIEGO—General Dynamics Corp. has been issued a license by the Atomic Energy Commission to operate an experimental nuclear facility near here.

## Beckman Instruments Leases More Land

PALO ALTO, CALIF.—An additional 12 acres of land has been leased by Beckman Instruments, Inc., for the purpose of expanding its Spince division plant, according to Maurice C. Hanafin, manager.

The lease brings to 17.5 acres of land Spince has under 99-year lease from Stanford University. The present 40,000-sq. ft. manufacturing facility was completed only last January. Expansion plans will be announced soon.

## Federal Steel Expands Stan-Steel Territory

LONG BEACH, CALIF.—The Federal Steel Corp., 1550 Canal Ave., is expanding its distributorship of Stan-Steel prefabricated buildings to Riverside and San Bernardino counties in California.

For the past year, Federal Steel has been the Stan-Steel dealer in Los Angeles and Orange counties. Don Taylor is sales manager for Federal Steel, Stan-Steel building division.

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See Directory listing page 123

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...for more details, circle No. 146

## Porter Adds Onto Canon City Plant

CANON CITY, COLO.—A manufacturing expansion and a maintenance improvement program will go into effect at the H. K. Porter, Inc., refractories plant here, reported E. G. Platt, general works manager.

Additions will increase the plant's productive capacity by 50%, said Platt. Also, he stated, the company will begin a large-scale maintenance program for repairs to kilns and stacks.

## Radioplane Co. Merges with Northrop

BEVERLY HILLS, CALIF. — A merger has been announced between Radioplane Co. of Van Nuys, Calif., and Northrop Aircraft, Inc.

Under the realignment, Radioplane will be operated by its own group of division officers. Radioplane is the nation's largest producer of target drone systems for the armed services.

## Tinplate plant

(Continued from page 159)

ting plant this year, and possibly at the Oakland coil plant at a later date, he said.

Research is also advancing on the incorporation of enameling units into the company's coil lines, he revealed—adding that this accomplishment would enable Canco to run inspected, treated and enameled plate directly off coils into can-making machines without ever putting it through the sheeting operation. He said that Canco already has a pilot-line under construction to accomplish such direct coil-into-cans manufacture.

## Eitel-McCullough Builds New Plant

SAN CARLOS, CALIF.—Construction is under way on a new \$2,000,000 plant for Eitel-McCullough, Inc., electronics firm.

The new structure will cover four acres of ground with another four acres of driveway and parking space. Twenty acres of company property are available on the site at Holly and Industrial Road for future expansions.

## Bendix Computer Doubles Facilities

LOS ANGELES—The Computer Division of Bendix Aviation Corp. will double its manufacturing facilities.

Additional engineering, production and marketing facilities are needed for an accelerated production program designed to keep pace with demand for general-purpose computers, said Maurice W. Horrell, divisional general manager.

## Whitman & Barnes



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WESTERN INDUSTRY — September 1957



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Main 4161

...for more details, circle No. 149  
**WESTERN INDUSTRY — September 1957**

## Bullard Acquires Beaver Machine Works

SAN FRANCISCO—E. D. Bullard Co., manufacturer of industrial safety equipment, has purchased the Beaver Machine Works.

Beaver has been manufacturing safety hoist hooks for Bullard. Beaver's former owner, *Robert Geraghty*, has been appointed machine shop superintendent of E. D. Bullard, which manufactures safety hoist hooks, truck steps and many other safety items in the Sausalito, Calif., plant.

## General Electric Sells Traffic Control Business

LOS ANGELES — The Econolite Corp. has bought all assets and equipment of the traffic control business from General Electric.

Econolite will take over the entire line of traffic signals and controllers formerly manufactured by the Outdoor Lighting department. Econolite will continue to serve as Western agent for GE's complete line of street lighting equipment.

## J. W. Minder Co. Takes on New Lines

LOS ANGELES—The J. W. Minder Chain & Gear Co. of Los Angeles and Portland has added the following lines as a stocking distributor:

Warner Electric Brake & Clutch Co., Beloit, Wisconsin—territory served will be Southern California only. Gerbing Mfg. Co., Northbrook, Ill., manufacturer of couplings, motor drives (mechanical and variable speed), variable speed pulleys—territory served will be Southern California and Oregon.

## Wiley-Bayley New Warehouse

SEATTLE—Wiley-Bayley, Inc., Northwest distributor of Dow Chemical plastic foam insulation (Styrofoam), has moved into new quarters at 3310 Meridian. The new warehouse provides twice the space of the former Seattle location.

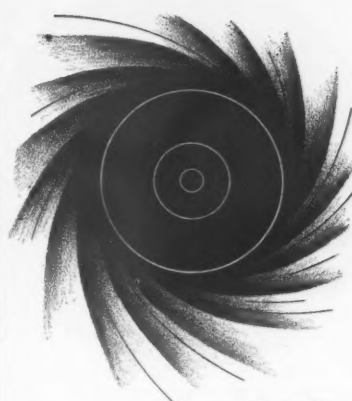
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...for more details, circle No. 150



## Lubrication at high speeds

These LUBRIPLATE Lubricants provide the all-necessary lubrication for those modern, high speed machines operating up to 30,000 revolutions per minute.

## LUBRIPLATE

**No. 205**—A superior and protective lubricant for anti-friction and plain sleeve grease type bearings, operating at speeds in excess of 5000 R.P.M. Widely used for lubrication of high speed bearings on woodworking machines, textile spindles, grinder arbors, etc.

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For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.



...for more details, circle No. 151

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## A Reliable Air Supply on the job 24 hours a day

### Atlas Copco CT Series Air-Cooled Compressors

The CT series compressors are designed for hard service in industries with air requirements of up to 330 cfm, at a working pressure of 100 lb. per sq. inch. These rugged compressors are built for continuous operation... month in, month out... plus economy in operation! A CT will deliver 5% more cfm of air per horsepower than other machines of the same type.

### Atlas Copco advance design KEY TO CT'S HIGH PERFORMANCE

- Valves are of the new annular type especially designed to combine high performance with long life.
- Well balanced crankshaft is drop-forged and carried in SKF spherical self-aligning roller bearings.
- Gear pump provides full pressure lubrication.
- Highly efficient air-cooled intercooler makes possible the delivery of air at nearly the same temperature as water-cooled machines.
- CT compressors are adaptable to a number of drive arrangements with gas, diesel or electric motors.

Atlas Copco Pacific field offices and engineers are available throughout the west to help you solve your compressed air problems. Write or call one of these offices today for the illustrated folder, E-843-c, on the CT series compressors.

Atlas Copco AR series compressors are available in outputs up to 3,200 cfm.

### Atlas Copco Pacific, Inc.

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...for more details, circle No. 152  
See Directory listing page 111

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## WESTERNERS AT WORK . . .

### Mercast Manufacturing Corp.



A. F. Anzlover

... of La Verne, Calif., announces the appointment of A. F. Anzlover as vice president and general manager of the corporation. The Mercast Corp., Western producer of precision castings through the use of the frozen mercury investment castings process, brought about the advancement of Anzlover as part of their expansion program now underway. Anzlover was special assistant to the inventor of the frozen mercury casting process and assisted in the formation of industrial Metal Castings Co., Cleveland—the company which later became Mercast Manufacturing Corp.

### Chase Brass & Copper Co.

... names Kenneth G. Downing to area salesman in San Francisco and Norman R. Kozan as salesman in Denver, Colo.

### Oakite Products, Inc.

... appoints J. Barrie Blackburn as technical service representative in Santa Monica. Blackburn, who recently completed an intensive eight-week training course at Oakite's New York laboratories and in the field, will serve the metal industries in the area.

### Link-Belt Co.

... appoints R. E. Tennery general superintendent of the Los Angeles plant. Tennery comes to Los Angeles after 11 years with Link-Belt's Seattle plant where he has been general superintendent. Link-Belt plans to move its Los Angeles operations to its new plant at Montebello some time in October.

### Goulds Pumps Western, Inc.



William Nepote

distributor salesmen in technical aspects of pump installation and servicing.

### Lindberg Engineering Co.

... names K. A. Lang as general manager of the manufacturing plant in Downey, Calif. He will also be responsible for sales activities of Lindberg Engineering Co. and Lindberg Industrial Corp. in Downey, San Francisco, Seattle, and Denver. Lang has been associated with Lindberg over 20 years, the past 10 years as manager of the Lindberg-Fisher melting division.

### Raybestos-Manhattan, Inc.



Arthur W. Byxbee

... assigns Arthur W. Byxbee as general manager of the recently acquired plant at Paramount, Calif. The Pacific Coast division at Paramount manufactures a complete line of Teflon and Kel-F products. Byxbee, who has been with R/M since 1938 in various capacities, has had a broad experience in products made of Teflon, having been associated with the plastic products division since 1952.

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Precision

**Tuf-Cut Wheels**

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**HOWARD SUPPLY COMPANY**

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WESTERN INDUSTRY — September 1957

## Soule Steel Company



L. M. Elmburg

... selects L. M. Elmburg as chief engineer for all company products. Elmburg's new duties include supervision of all engineering phases of the company's operations. He will direct engineering on Soule buildings and on aluminum and steel windows, metal lath and other steel building products. Elmburg was promoted from his position as Los Angeles district engineer and assistant sales manager.

## B. F. Goodrich Industrial Products Co.

... names Donald W. Reagan as Los Angeles district manager. Reagan comes to Los Angeles from the company's San Francisco district where he has been employed for the past five years as special field representative. He succeeds Lee L. Horchitz who was Los Angeles district manager for 28 years. Horchitz has been appointed Western representative on a newly organized B. F. Goodrich management council.

## Clark Controller Co.



David J. Belock

... opens a San Francisco district sales office and names David J. Belock, who previously was an application engineer in the company's Pittsburgh, Pa., office, as manager. Clark Controller manufactures standard and specially-engineered electric control devices and systems.

## General Logistics

... selects Dick Mosher as industrial sales manager. Mosher was formerly an industrial and aircraft sales engineer for Aeroquip Corporation. General Logistics is a subsidiary of Aeroquip and manufactures and sells load control and tie-down equipment for aircraft, industrial and freight transportation applications.

## Triangle Conduit & Cable Co.

... selects Robert E. Wallace as San Francisco district manager. Wallace, who will cover the Northern California territory, has been with Triangle since 1955. He has had wide experience in the electrical field.

## Kaiser Gypsum Co.

... names Tommy C. Donovan as merchandise manager for the gypsum division and Richard C. Crowle as merchandise manager of the insulation board division. Both positions have been newly created to accommodate increased responsibilities resulting from the company's program of expansion and diversification.

## Masonite Corp.

... appoints Dean B. Thatcher as general manager of the hardboard plant in Ukiah, Calif. Thatcher has been acting manager since May 1. He joined the corporation in the fall of 1948.

# CLASSIFIED SECTION

Space is sold as advertisers' inches. All advertisements in this section are 1/8 inch short of contracted space to allow for borders and composition. Rates are \$12.00 a column inch. Copy should be sent in by the 25th of preceding month if proofs are required; by the 28th if no proofs are required.

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## Westinghouse Electric Corp.

... announces the appointments of Arthur G. Kane, Jr., and Carl W. Waldow as apparatus area sales managers. Both men will continue to make their headquarters at 600 St. Paul Ave., Los Angeles, district headquarters. Kane joined Westinghouse in 1944 and Waldow in 1935.

## Ford Motor Co.

... appoints Neal A. Hammond to the newly created post of planning and engineering manager and promotes Charles R. Thomson to the post of production manager. Hammond, former industrial relations manager and production manager, will coordinate the operations of six major divisions.

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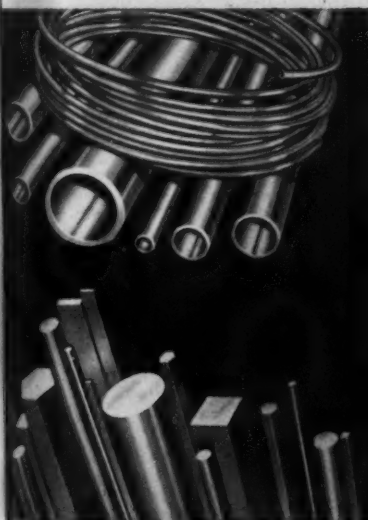


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